

**Schreiber, David**

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**From:** Ramirez, Delia  
**Sent:** Friday, April 29, 2005 3:59 PM  
**To:** Schreiber, David  
**Subject:** case 09/371347

Hi,

I would like to request the following alignments:

- 1. SEQ ID NO:2 against SEQ ID NO:25, 52-61.
- 2. SEQ ID NO:1 against SEQ ID NO:25, 52-61
- 3. SEQ ID NO:41 against SEQ ID NO:25, 52-61
- 4. SEQ ID NO:43 against SEQ ID NO:25, 52-61
- 5. SEQ ID NO:45 against SEQ ID NO:25, 52-61
- 6. SEQ ID NO:47 against SEQ ID NO:25, 52-61
- 7. SEQ ID NO:2 against SEQ ID NO:1, 41, 43, 45, 47

Thank you,

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GenCore version 5.1.6  
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OM nucleic - protein search, using frame\_plus\_nbp model

Run on: May 9, 2005, 15:32:35 ; Search time 5.5 Seconds  
(without alignments)  
4.589 Million cell updates/sec

Title: us-09-371-347a-45  
Perfect score: 3764  
Sequence: 1 atgagagaggttcgttcttact.....ttcagatattggtcataa 2094

Scoring table: BIOSUM62  
Xgapop 10.0 , Xgapext 0.5  
Ygapop 10.0 , Ygapext 0.5  
Fgapop 6.0 , Fgapext 7.0  
Delop 6.0 , Delext 7.0

Searched: 34 seqs, 6026 residues  
Total number of hits satisfying chosen parameters: 68

Minimum DB seq length: 0  
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

Command line parameters:  
-MODEL=frame+ -nbp.model -DEV=soft -Q=us-09-371-347a-45 -DB=US09371347A.pep  
-SUFFIX=ptc -OUT=align45 -MINMATCH=0.1 -LOOPEL=0 -LOOPEXT=0 -UNIT=bits  
-START=1 -END=1 -MATRIX=blomsum62 -TRANS=human40.cdi -LIST=45 -DOCALIGN=200  
-THR SCORE=pct -THR MAX=100 -THR MIN=0 -ALIGN=45 -MODE=LOCAL -OUTFMT=ptc  
-NORM=ext -HEADSIZE=500 -MINLEN=0 -MAXLEN=200000000 -NCPU=6 -NO\_XLPHY  
-NEG SCORES=0 -LONGLOG -THRADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOP=6 -FGAPEXT=7  
-YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7

Database : US09371347A.pep:\*

Pred. No. is the number of results predicted by chance to have a  
score greater than or equal to the score of the result being printed,  
and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	3620	96.2	697	1 US-09-371-347A-46	Sequence 46, Appl
2	3609.5	95.9	698	1 US-09-371-347A-2	Sequence 2, Appl
3	3609.5	95.9	698	1 US-09-371-347A-21	Sequence 21, Appl
4	3605.5	95.8	698	1 US-09-371-347A-42	Sequence 42, Appl
5	3589.5	95.6	698	1 US-09-371-347A-44	Sequence 44, Appl
6	3461.5	92.0	689	1 US-09-371-347A-48	Sequence 48, Appl
7	914.5	24.3	682	1 US-09-371-347A-22	Sequence 22, Appl
8	722	19.2	677	1 US-09-371-347A-23	Sequence 23, Appl
9	215	5.7	41	1 US-09-371-347A-60	Sequence 60, Appl
10	158	4.2	22	1 US-09-371-347A-54	Sequence 54, Appl
11	117	3.1	22	1 US-09-371-347A-58	Sequence 58, Appl
12	116	3.1	23	1 US-09-371-347A-53	Sequence 53, Appl
13	104	2.8	19	1 US-09-371-347A-55	Sequence 55, Appl
14	100	2.7	20	1 US-09-371-347A-52	Sequence 52, Appl
15	94.5	2.5	18	1 US-09-371-347A-25	Sequence 25, Appl
16	87	2.3	17	1 US-09-371-347A-57	Sequence 57, Appl
17	68	1.8	14	1 US-09-371-347A-56	Sequence 56, Appl
18	61.5	1.7	682	1 US-09-371-347A-22	Sequence 22, Appl
19	53	1.4	18	1 US-09-371-347A-30	Sequence 30, Appl
20	52	1.4	18	1 US-09-371-347A-26	Sequence 26, Appl
21	52	1.4	18	1 US-09-371-347A-29	Sequence 29, Appl

22	51	1.4	9	1 US-09-371-347A-61	Sequence 61, Appl
23	51	1.4	18	1 US-09-371-347A-35	Sequence 35, Appl
24	50	1.3	18	1 US-09-371-347A-34	Sequence 34, Appl
25	50	1.3	689	1 US-09-371-347A-48	Sequence 48, Appl
26	49.5	1.3	697	1 US-09-371-347A-46	Sequence 46, Appl
27	49.5	1.3	698	1 US-09-371-347A-2	Sequence 2, Appl
28	49.5	1.3	698	1 US-09-371-347A-21	Sequence 21, Appl
29	49.5	1.3	698	1 US-09-371-347A-42	Sequence 42, Appl
30	49.5	1.3	698	1 US-09-371-347A-44	Sequence 44, Appl
31	49	1.3	677	1 US-09-371-347A-23	Sequence 23, Appl
32	48	1.3	18	1 US-09-371-347A-28	Sequence 28, Appl
33	44	1.2	18	1 US-09-371-347A-32	Sequence 32, Appl
34	43	1.1	18	1 US-09-371-347A-27	Sequence 27, Appl
35	42.5	1.1	18	1 US-09-371-347A-38	Sequence 38, Appl
36	40	1.1	18	1 US-09-371-347A-37	Sequence 37, Appl
37	36.5	1.0	18	1 US-09-371-347A-36	Sequence 36, Appl
38	36	1.0	18	1 US-09-371-347A-33	Sequence 33, Appl
39	35	0.9	18	1 US-09-371-347A-31	Sequence 31, Appl
40	35	0.9	19	1 US-09-371-347A-55	Sequence 55, Appl
41	30	0.8	18	1 US-09-371-347A-36	Sequence 36, Appl
42	29	0.8	6	1 US-09-371-347A-59	Sequence 59, Appl
43	29	0.8	22	1 US-09-371-347A-58	Sequence 58, Appl
44	28	0.8	17	1 US-09-371-347A-57	Sequence 57, Appl
45	27	0.7	18	1 US-09-371-347A-30	Sequence 30, Appl

## ALIGNMENTS

RESULT 1  
US-09-371-347A-46  
; Sequence 46, Application US/09371347A  
; GENERAL INFORMATION:  
; APPLICANT: Gravel, Roy A.  
; APPLICANT: Rozen, Rima  
; APPLICANT: Leclerc, Daniel  
; APPLICANT: Wilson, Aaron  
; APPLICANT: Rosenblatt, David  
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
; FILE REFERENCE: 50004/003003  
; CURRENT APPLICATION NUMBER: US/09/371,347A  
; CURRENT FILING DATE: 1999-08-10  
; PRIOR APPLICATION NUMBER: 09/232,028  
; PRIOR FILING DATE: 1999-01-15  
; PRIOR APPLICATION NUMBER: 60/071,622  
; PRIOR FILING DATE: 1998-01-16  
; NUMBER OF SEQ ID NOS: 61  
; SOFTWARE: FastSeq for Windows Version 4.0  
; SEQ ID NO 46  
; LENGTH: 697  
; TYPE: PRT  
; ORGANISM: Homo sapiens  
US-09-371-347A-46

## Alignment Scores:

Pred. No.: 2.45e-67 Length: 697  
Score: 3620.00 Matches: 697  
Percent Similarity: 100.00% Conservative: 0  
Best Local Similarity: 100.00% Mismatches: 0  
Query Match: 96.17% Indels: 0  
DB: 1 Gaps: 0

us-09-371-347a-45 (1-2094) x us-09-371-347a-46 (1-697)

Qy	1	ATGAGAGAGTTCCTGTTACTATATGCTACACAGCAGGACGCAAGGCGCATGCAGAA	60
Db	1	MetcargargheleuleuleuYyAlaThrcGlnclnglYglnAlaIleAlaIleGlu	20
Qy	61	GAATGCTGTGACAGCTGTGCTGATCATGATTTTCGACAGATCTTCACTGTATTAGCAA	120
Db	21	GluMetCysgluGlnAlaIleAlaIleGlyPheSerIaIaSpIeuIaIaCysIleSerGlu	40

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QY 121 TCGGATAGTATGACCTTAAAAACCGAAAGAGCTCCTCTGTTGTTGTTGTTCTTACAGC 180
DB 41 Seraspysrlysrableuysrthglunthralaproleuvalvalvalserththr 60
QY 181 GGCACCGGAGACCCGACGACAGCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240
DB 61 GlythrGlyaspProProaspThrAlaArglyspheValylsGluileGlnAsnGlnThr 80
QY 241 CTGCGCGGTGATTTCTTGTCTGACCTGCGGTATGGTTACTGGGTCTCGGTATCGAA 300
DB 81 LeuproValaspPheleuAlahlsleuArglyrGlyleuenglyleuGlyaspSerGlu 100
QY 301 TACACCTACTTTTTCATGGGGGAGATTAATGATTAACGACTTCAAGAGCTTGAGCC 360
DB 101 TythrTyrrheCyasaenGlyGlylysi1le1leaspysasgleuGlnGluValAla 120
QY 361 CGGCAATTCATGACACTGACATGACATGACATGCTGTAGGTTTGAAGCTTGTTGAG 420
DB 121 ArgthspheTyrraspThrnglyHlsalaspaspCyserValGlyleuGluValGlu 140
QY 421 CCGTGATTTGCTGACTCTGGCCAGCCCTCAGAAAGCATTTTACGTCAAGCAGACAA 480
DB 141 ProThrpleaGlyleuTyrrProAlaleuArglyshspheArgserSerArglyGln 160
QY 481 GAGAGATTAAGTGGCGGACTCCGCGTGCATCACCTGCATCTTGAGAGACAGACTTGTG 540
DB 161 GluGluileserGlyAlaleuProValAlaserProAlaserleuArgthraspLeuVal 180
QY 541 AAGTCAGAGCTGCTACACATTTGAATCTCAAGTCAGAGCTTGAGATTTCAGATTCAGA 600
DB 181 LysSerGluLeuLeuHlsileGlySerGlnValGlyleuLeuArgPheaspSerGly 200
QY 601 AGAAGATTTCTGAGGTTTGAAGCAAAATGCACTGAACGACCAACCAATCCAATGTGTA 660
DB 201 ArglyaspserGlyValleuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
QY 661 ATTGAACATTTGAGCTCTCACTTACCCGTTCCGTTACCCCACTCACAAGCTCTCTG 720
DB 221 IleGluaspPheGluSerSerleuThrArgSerValProProleuSerGlnAlaserleu 240
QY 721 AATATTCCTGTTTACCCCGAAATATTTACAGGTATCTGACAGAGCTCTTGGCCAG 780
DB 241 AsnIleProGlyLeuProProGluTyrrleuGlnValHlsleuGlnGlnSerleuGln 260
QY 781 GAGGAAGCCAGATCTGACCTTCAGCCTTCAGCAGATCTTTCAGTCCCAATTTCAAAG 840
DB 261 GluGluSerGlnValSerValThrSerAlaspProValPheGlnValProIleSerLys 280
QY 841 GCAGTTCAACTACTAGATGATGATGATGATGATGATGATGATGATGATGATGATGAT 900
DB 281 AlaValGlnleuThrThrAsnAspAlaIlelyserThrleuLeuValGluLeuAspIle 300
QY 901 TCAAAATACAGACTTTTCTTACCTCAGCTGAGAGATGCTTACGCTGATCTGCCCTAAC 960
DB 301 SerAsnThrAspPheSerTyrrGlnProGlyAspAlaPheSerValIleCyProAsnSer 320
QY 961 GATTTCGAGTACAAAGCTTACTCCAAAGACTGAGCTTGAAGATTAAGAGCACTGC 1020
DB 321 AspSerGlnValGlnSerleuLeuGlnArgleuGlnleuGlnAspLysArgGlnHlsCys 340
QY 1021 GTGCTTTGAAATTAAGAGCAGACACAAAGAAAGAGACTTACCTTACCCAGCATATA 1080
DB 341 ValLeuLeuysrIleleysrAlaaspThrlyslslyslslyAlaThrleuProGlnHlsIle 360
QY 1081 CCGTGGGAGATTTCTTCCAGTTCAATTTTACCTGCTGCTTGAATCCAGCAATTTCT 1140
DB 361 ProAlaGlyCysSerleuGlnPheIlePheThrTyrrCysleuGlnIleArgAlaIlePro 380
QY 1141 AAAAAGCATTTTGGAGGCTTGTGACTATTAACGATGACAGTGTGAAAAGCCGAGG 1200
DB 381 LysylsAlaPheLeuAlaValAlaValAspTyrrThrSeraspSerAlaGlnLysArgArg 400
QY 1201 CTACAGAGCTGTGACGTAAACAAGGGGACGCGATTATGACGCTTTGTACAGATGCC 1260

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DB 401 LeuGlnleuLeuCysserLysGlnGlyAlaAlaAspTyrrSerArgPheValAlaAspAla 420
QY 1261 TGTGCTGCTGTGTGATCTCTCTGCTTCTTCCAGCCAGCCAGCTCAGTCTC 1320
DB 421 CysAlaCyseuLeuAspLeuLeuAlaPheProSerCysGlnProProleuSerleu 440
QY 1321 CTGCTGAAATCTTCTTAACCTTCAACCCAGACCATTTGCTGTGGAACCTCAAGTTTA 1380
DB 441 LeuenglnHlsleuProLysleuGlnProArgProTyrrSerCysAlaSerSerleu 460
QY 1381 TTTCACCCAGGAAGCTCCATTTTGTCTTCAACATTTGGAATTTCTGTACTGCGACA 1440
DB 461 PheHlsProGlyLysleuHlsPheValPheAsnIleValGluLeuLeuSerThrAlaThr 480
QY 1441 ACAAGGTTCTGCGAAGGAGATATGATGACAGCTGCGCTGTGTTGTTGCTTCAATT 1500
DB 481 ThrGluValleuArglyGlyValCysThrGlyTyrrPheuAlaleuLeuValAlaSerVal 500
QY 1501 CTTTCAGCCAAACATACATGATGCCATGGAAGACAGCGGGAAGCCCTGGCTCTTAAGATA 1560
DB 501 LeuGlnProAsnIleHlsAlaSerHlsGluaspSerGlyLysAlaLeuAlaProLysIle 520
QY 1561 TCCATCTCTCTGGAACCAACAAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
DB 521 SerIleSerProArgThrThrAsnSerPheHlsleuProAspAspProSerIleProIle 540
QY 1621 ATAATGTTGGGTCAGGAACCGGCATAGCCCGCTTATTTGGTTTCTTACAACTAGAGAG 1680
DB 541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheleuGlnHlsArgGlu 560
QY 1681 AAATCCGAAGACAAACACCCAGATGGAATTTTGAGCAATGTGTTTGTGCTGAGG 1740
DB 561 LysleuGlnIleuHlsProAspGlyAsnPheGlyAlaMetCrrPhePheGlyCysArg 580
QY 1741 CATTAAGATTAAGGATTAATCTATTCAAGAAAAGACTGACATTTCTTAAAGATGGAGATC 1800
DB 581 HlsLysAspArgAspTyrrleuPheArglyGluLeuArgHlsPheleuysrHlsGlyIle 600
QY 1801 TTAATCTATTAAGGTTTCTTCTGACAGATGCTCTGTTGGGAGAGGAAGCCCA 1860
DB 601 LeuThrHlsleuLysValSerPheSerArgAspAlaProValGlyGluGlnGluAlaPro 620
QY 1861 GCAAGATGTAACAGCAACATCCAGCTTCAAGGCGAGAGGTGGGAGATCCCTCTC 1920
DB 621 AlaLysTyrrValGlnAspAsnIleGlnleuHlsGlyGlnGlnValAlaArgIleleuLeu 640
QY 1921 CAGAGAACCGCCATATTTATGTGTGTGAGATGACAAAGATATGGCCAAGATGTACAT 1980
DB 641 GlnGluAsnGlyHlsIleTyrrValCysGlyAspAlaLysAsnMetAlaLysAspValHls 660
QY 1981 GATGCCCTGTGCAATATATACAAAGAGCTTGAAGTTGAAAACATGAAAGCATGAAA 2040
DB 661 AspAlaLeuValGlnIleIleSerLysGluValGlyValGlyLysleuGlnAlaMetLys 680
QY 2041 ACCCTGGCCACTTAAAGAAAGAAAGCTTACCTCAGGATTTTGTGTA 2091
DB 681 ThrleuAlaThrleuLysGlnLysArgTyrrleuGlnAspIleTyrrSer 697

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RESULT 2  
 US-09-371-347A-2  
 ; Sequence 2, Application US/09371347A  
 ; GENERAL INFORMATION:  
 ; APPLICANT: Gravel, Roy A,  
 ; APPLICANT: Rozen, Rima  
 ; APPLICANT: Leclerc, Daniel  
 ; APPLICANT: Wilson, Aaron  
 ; APPLICANT: Rosenblatt, David  
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
 ; CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
 ; DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
 ; FILE REFERENCE: 50004/003003  
 ; CURRENT APPLICATION NUMBER: US/09/371,347A





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QY 1858 CCAGCAAGATGATGACAAAGACATCCAGCTTCAGGCCAGAGGTGGCGAATCTCTC 1917
Db 621 ProhalysTyrrValGlnAspAsnIleGlnLeuHsiGlnGlnValAlaArgIleLeu 640
QY 1918 CTCGAGGAAACGGCCATATTATTATGTGTGTGAGATGCAAAAGATATGGCCAGATGTA 1977
Db 641 LeuGlnGlnAsnGlnHsiIleTyrrValCysGlnAspAlaLysAsnMetalAlaAspVal 660
QY 1978 CATGATGCCCTTGTGCAAAATATAAGCAAGAGGTGGAGTTGAAAATCTAGAGCATG 2037
Db 661 HisAspAlaLeuValGlnIleSerGlnValGlnValGlnLysLeuGlnLavec 680
QY 2038 AAAACCCCTGGCCACTTTAAAGAAAGAAAGCACTTCAGATATTGGTCA 2091
Db 681 LysThrLeuAlaThrLeuLysGlnLysArgTyrrLeuGlnAspIleTrpSer 698

RESULT 3
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq For Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PR1
; ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 3,87e-67 Length: 698
Score: 3609.50 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 0
Query Match: 95.90% Indels: 1
Gaps: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-21 (1-698)
QY 1 ATAGAGAGGTTTCCTGACTATATGCTACACAGAGGACAGCAAGGCCATCGCAGAA 60
Db 1 MetArgArgPheLeuLeuLeuTyrrAlaThrGlnGlnIleGlnAlaLysAlaIleAlaGln 20
QY 61 GAAATGATGAGCAAGCTGTGTATCATGATTTTCTGCAGATCTTCACTGATATTAGTAA 120
Db 21 GlnMetCysGlnGlnAlaValAlaHisGlnPheSerAlaAspLeuHsiCysIleSerGln 40
QY 121 TCGGATAGATGACCTTAAAGCGAAACAGCTCTTGTGTGTGTGTGTGTCTACACAG 180
Db 41 SerAspLysTyrrAspLeuLysThrGlnThrAlaProLeuValValValIleSerThrThr 60
QY 181 GGCACCGGAGAACCCACCCGACACAGCCCGCAAGTTTGTTAAGAAATACGAACCAACA 240
Db 61 GlyThrCylAspProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
QY 241 CTCGCGGTTGATTTCTTGTCAACCTGCGGTATGGGTACTGGGTTCTCGGTGATTGAA 300
Db 81 LeuProValAspPhePheAlaHisLeuArgTyrrCylLeuLeuGlnLysGlnAspSerGln 100
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QY 301 TACACCTACTTTTGCATGGGGGGAGAGATTAATTGATAACGACTTCAAGACTTGGAGCC 360
Db 101 TyrrThrTyrrPheCysAsnGlnYlYlYlIleLeuAspLysArgLeuGlnLysGlnYlAla 120
QY 361 CGGCAATTCTATGACACTGACATGACATGACTGTGTAGATTGAACTGTGTGTGAG 420
Db 121 ArgHisPheTyrrAspThrGlnHsiAlaAlaAspAspCysValGlnLeuGlnLeuValValGln 140
QY 421 CCGTGATTTGTGACCTCTGGCCAGCCCTCAGAAAGCATTTTATAGTAAAGCAGAGCA 480
Db 141 ProThrIleAlaGlnLeuTrpProAlaLeuArgLysHsiAspLeuArgSerSerArgGln 160
QY 481 GAGGAGATTAAGTGGCGCAGCTCCGAGTGACATCCTGATCTTGAAGACAGACCTTGTG 540
Db 161 GlnGlnLysSerGlnAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTCGAGCTTGTGATTCGATTCAGGA 600
Db 181 LysSerGlnLeuLeuHsiIleGlnSerGlnValGlnLeuLysArgPheAspAspSerGln 200
QY 601 AGAAGATTTCTGAGGTTTGAAGCAAAATGCACTGAACGAAACCAATCCATGTGTGA 660
Db 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
QY 661 ATTGAAGACTTTGAGTCCCTCACTTACCCGTTGCGTACCCCACTTCAGACAGCCTCTG 720
Db 221 IleGlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 AATATTCCTGTGTTACCCCGCAATATTACAGTACATCTGAGAGAGTCTCTGGCCAG 780
Db 241 AsnIleProGlnLeuProProGlnTyrrLeuGlnValHisLeuGlnGlnSerLeuGln 260
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QY 841 GCAGTTCACTTACTACGATGATGCAATGCAATAAACCACTCTGCTGTAGATTTGACATT 900
Db 281 AlaValGlnLeuThrThrAsnAspAlaIleTyrrThrLeuLeuValGlnLeuAspIle 300
QY 901 TCMAATACAGACTTTTCTATACGCTCGAGATGCTTCAGCGTATCTGCCCTTAACAGT 960
Db 301 SerAsnThrAspPheSerTyrrGlnProGlnYlAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTCTGAGGTACAAAGCCCTCAAGCTCAGCTGAGATGAGATTAAGAGAGCACTGC 1020
Db 321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnLysPysArgGlnHsiCys 340
QY 1021 GTCCCTTTGAAAATAAGGACGACACAAAGAAAGAGACTTACCTTACCCGACATATA 1080
Db 341 ValLeuLeuLysIleLysAlaAspThrLysLysLysGlnYlAlaThrLeuProGlnHsiIle 360
QY 1081 CCTCGCGGATGTTCTCTCCAGTTCAATTTTACTGCTGTCTTGAATCCGAGCAATTTCT 1140
Db 361 ProIleGlnCysSerLeuGlnPheIlePheThrTyrrCysLeuGlnIleArgAlaIlePro 380
QY 1141 AAAAAGCAATTTTGGAGCCCTGTGGACTATACAGAGGACAGTCTGAAAAAGCCAGG 1200
Db 381 LysLysAlaPheLeuArgAlaLeuValAspTyrrThrSerAspSerAlaGlnLysAspArg 400
QY 1201 CTACAGAGCTGTGACGTAAACAAAGGGGACCGCATATAGCCGCTTTGTACAGATGCC 1260
Db 401 LeuGlnGlnLeuCysSerLysGlnGlnYlAlaAlaAspTyrrSerArgPheValArgAspAla 420
QY 1261 TGTGCTGCTGTGTGATCTCTCTCGCTTTCCTTTCTTGCCAGGCAACCACTCACTC 1320
Db 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGGAACATCTTCTTAACTTCAACCCAGACCATATTCGAGTCAAGCTTCAACTTGA 1380
Db 441 LeuLeuGlnHsiLeuProLysLeuGlnProArgProTyrrSerCysAlaAspSerSerLeu 460
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Oy 1381 TTTCACCCAGGAAGAGCTCATTTTGTCTTCAACATGTGGAAATTTCTGTACTGCCACA 1440
Db PhehIsProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Oy 1441 ACAGAGGTTCTCCGGAGAGAGTATGTACAGAGCTGGCGCTGGCTGTGGTGGCTTCAGTT 1500
Db ThrGluValIleuAsnGlyLysGlyValCysThrGlyTyrPheValAlaLeuValAlaSerVal 500
Oy 1501 CTTCAAGCCAAACATACATCATGCCATGCCATAGACACAGCCGGGAAAGCCCTGGCTCTTAAGATA 1560
Db LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle 520
Oy 1561 TTCATCTCTCTCCCAACACAAATTTCTTCCATCTTACATGACATGCCCTCAATCCCATC 1620
Db SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Oy 1621 ATATATGGGGGCTCCAGGAACCGGCTACCCCGCTTATATGGGTTCTTACAACTATAGAGAG 1680
Db IleMetValGlyProGlyThrGlyTyrIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Oy 1681 AAATCTCCAAAGAACAAACCCAGATGGAATTTTGGAGCATGTGG--TTTTTTGGCTGC 1737
Db LysIleuGlnGluGlnHisPheProAspGlyAsnHisGlyAlaMetCtyrPhePheHisGlyCys 580
Oy 1738 AGGCATTAAGATAGAGGATTAATCTATTCAAAAAGAGCTCAGACATTTCTTAAGCATGG 1797
Db ArgHisLysAspArgAspTyrLeuPheArgGlySerGluLeuAlaGlnHisPheLeuLysGly 600
Oy 1798 ATCTTAATCTATCTTAAGGTTTCTCTTCCAGAGAGATGCTCTGTGTGGGAGAGAGAGCC 1857
Db ATCTTAATCTATCTTAAGGTTTCTCTTCCAGAGAGATGCTCTGTGTGGGAGAGAGAGCC 1857
Oy 1858 CCAGCAAAAGTATGTACAGACAAACATCCAGCTTCATGGCCAGAGGATGGCAGAAATCTTC 1917
Db ProAlaLysTyrValGlnAspAsnIleGlnMetHisGlyGlnGlnValAlaArgIleLeu 640
Oy 1918 CTCACAGAGAAACGGCCATATTTATGTGTGTGAGATGCAAGAAATATGATGCCAAGATGTA 1977
Db LeuGlnGluAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Oy 1978 CATGATGCCCTTGTGCAATATTAAGCAAAAGGTTGAGATTTGAAAACTGAAAGCATG 2037
Db HisAspAlaLeuValGlnIleIleSerGlyGluValGlyValGluLysLeuGluAlaMet 680
Oy 2038 AAAACCTGGCCACCTTTAAAGAGAAAGAAAGCGTACCTTCAGAGATTTGGTCA 2091
Db LysThrIleuAlaThrIleuLysGluGluLysArgTyrLeuGlnMetIleTyrSer 698

RESULT 4
US-09-371-347A-42
Sequence 42, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Gravel, Roy A,
APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 42
LENGTH: 698
TYPE: PRT
ORGANISM: Homo sapiens

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US-09-371-347A-42					
<b>Alignment Scores:</b>					
Pred. No. :	4,6e-67	Length:	638		
Score:	3605.50	Matches:	636		
Percent Similarity:	99.86%	Conservative:	1		
Best Local Similarity:	99.71%	Mismatches:	0		
Query Match:	95.79%	Indels:	1		
DB:	1	Gaps:	1		
us-09-371-347a-45 (1-2094) x us-09-371-347A-42 (1-698)					
QY	1	ATGAGAGAGTTCTGTACTATAATGCTACACAGCAGGACAAGCAAAAGCCATCCAGAA	60		
Db	1	MetAArgspPheLeuLeuLeuYrAlatrrgInglnglAlaValalalevalaglu	20		
QY	61	GAAATGTGTGACCAAGCTGTGTACATGGATTTCCTGCAGATCTTCACTGATTAGTGA	120		
Db	21	GlutleCYSGluginAlaValahlsGlypheSerAlaspleuhieCySlieserGlu	40		
QY	121	TCCGATTAAGTATGACCTAAAAACGAAACAGCTCCTTTGTTGTGTGTTCACACG	180		
Db	41	SerAspLySTyrAspLeuLysThrGrUthrAlaproleuValValValSerThrThr	60		
QY	181	GGCACCGGAGACCACCCGACACAGCCGCCAAGTTGTTAAGAAATACGAACCAAACA	240		
Db	61	GlyThrGIyAspProPobAspThrxAlaArgLvsPheValIySglIntleglnanGlnThr	80		
QY	241	CTGGCCGTTGATTTCTTGCTCACCTGGGCTAATGGGTTACTGGGCTCGGTGATTGAAA	300		
Db	81	LeuProValAspPhePheAlahlsleuArGTYrGLYLeuLengLIyeugLYaspserGlu	100		
QY	301	TACACCTACTTTTGGCAATGGGGGAGAATAATTGATTAACGACTTCMAAGCTTGAACC	360		
Db	101	TyrThrTyrrPheCybaSnGLyGLYylsetlleleAspLyArIGleuSIngIUeuGLYAla	120		
QY	361	CGGCATTTCTATGACACTGGACATGCATGACTGTGTAGGTTTAGAAGCTTGTTGAG	420		
Db	121	ArgHisPheTyrrAspThrGLYHIsAlaAspAspCySvaIGLYeunGIueuVaIVaIGlu	140		
QY	421	CCGTGGATTCCTGACCTCTGGCACCCTCACAAGACATTTTAAGTCAGACGAGACAA	480		
Db	141	ProTrIleAlaglYLeuTrProAlaLeuAgLYshIsPheNrgserxerArGlyGln	160		
QY	481	GAGGAGATTAAGTGGGCACTCCCGGTGGCATCACTGCATCTTGTGAGACAGACTTGTG	540		
Db	161	GIUGluIIeserGILAlaleuProValAlaserProAlSerleuArgrhAspleuVal	180		
QY	541	AAGTCAGAGCTGTACACATTTCAATCTCAAGTCAGACTTGTGAGATTGCATGATTCAGA	600		
Db	181	LysSerGIuLeuLeuHIErllegIuberGlnValIGluLeuArghPheAspserGly	200		
QY	601	AGAAAGGATTCGAGGTTTTTGAAGCAAAATGAGATGAACAGCAACCAATCCATGTTGA	660		
Db	201	ArgLyAspAspSerGluValleuLysGlnsnAlaValAsnSerAsnGlnSerAsnVal	220		
QY	661	ATTGAAGACTTGAAGTCCCTCACTTACCCTGGGTGATCCCCACTCTCAAGAGCTCTTG	720		
Db	221	IlegIuAspPheGlnSerleuThrArghSerValProProleuSerGlnAlaserleu	240		
QY	721	AATATTCCTGTATTACCCCACCAATATTTCACAGTACATCTGCAGGAGTCTTGTGGCAC	780		
Db	241	AsnIleProGlyLeuProProGluTrIyrrLeuGlnValHIsleuGlnGluSerleuGlyGln	260		
QY	781	GAGAAAGCCAAGTATCTGTGACTTCAGACAGATCCAGTTTTTCAAGTGGCAATTTCAAG	840		
Db	261	GIUGluSerGlnValSerValThrSerAlAspProValPheGlnValProIleserLys	280		
QY	841	GCAGTTCAACTTACAGCATGATGCATTAATAAACCACTCTGCTGTAGAATTGGACATT	900		
Db	281	AlaValGlnLeuThrThrAsnAspAlalleYstrThrLeuLeuValIGluLeuAspIle	300		
QY	901	TCAATATACAGACTTTCTATCAGCTGGAGATGACCTTCAGCGTATCTGCCTTACAGT	960		

Db	301	SerSerThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer	320
OY	961	GATTCGAGGTACCAAGACCTTACTCCAAAGACTCGACGCTTGAAATGATAAAGAGACATGCG	1020
Db	321	AepSerGlnValaGlnSerIleuLeuGlnArgLeuGlnIleuGlnAspLysArgGlnIleCys	340
OY	1021	GTCCCTTTGAAAATTAAGGACACACAAAGAAAGAAAGAGCTTACCTTACCAGCATATA	1080
Db	341	ValIleuLeuValIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnIleIle	360
OY	1081	CCTGGGGGATGTCTCTCCAGTTCATTTTTCCTGGTGTCTTGAAATCCAGCAATTCCT	1140
Db	361	ProAlaGlnCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro	380
OY	1141	AAAAAGCATTTTTCGAGACCTTGTGACTATACAGTACAGTGCCTGAAGACGCAAG	1200
Db	381	LysLysAlaPheLeuArgAlaLeuValAspTyrThrIleAspSerAlaGlnLysArgArg	400
OY	1201	CTACGAGAGCTGTGAGATTAACAAGAGGAGCGCATTTAGCGCGCTTGTCGAGATGCG	1260
Db	401	LeuGlnGlnLeuCysSerLysGlnIleAlaAlaAspTyrSerAlaGlyPheValArgAspAla	420
OY	1261	TGTGCTCTGTGTGATCT	1320
Db	421	CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProLeuSerLeu	440
OY	1321	CTGCTCGAATCTTCTTAAATTCACCCAGACCATTTGCTGTGCAAGCTCAAGTTTA	1380
Db	441	LeuLeuGlnIleLysLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerLeu	460
OY	1381	TTTTCACCCAGAAAGCTCCATTTTGTCTTCAACATTTGTGAATTTCTGTCTACGCCACA	1440
Db	461	PheHisProGlnLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr	480
OY	1441	ACAGAGGTTTCGGGAAGAGAGTATGTACAGAGCTGGCGCTTGTGGTTCCTCACT	1500
Db	481	ThrGlnValLeuAspLysGlyValCysThrGlyPheAlaLeuLeuValAlaSerVal	500
OY	1501	CTTCAGCCAAACATACATGATCCCATGACAGACGGGAAAGCCCTGAGCTCCAAAGTAA	1560
Db	501	LeuGlnProAsnIleHisAlaSerHisGlnLysPheSerGlyLysAlaLeuAlaProLysIle	520
OY	1561	TTCATCTCTCTCGAACACAAATTTCTTCCATTCACAGATGACCCCTCAATCCCATC	1620
Db	521	SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle	540
OY	1621	ATAATGTGGGTCCGAAACCGGACCTACCCCGATTATTTGGGTTCTCTCAACATGAGAG	1680
Db	541	IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGly	560
OY	1681	AAACTCCAAAGACCAACCCAGATGGAAATTTTGAGCAATGTGG--TTTTTGGCTGC	1737
Db	561	LysLeuGlnGlnGlnIleProAspGlyAsnPheGlyAlaMetCysPhePhePheGlyCys	580
OY	1738	AGGCATAGATAGGAGTTATCTATTGAGAAAGCTCAACATTCCTTAACATAGGG	1797
Db	581	ArgHisLysAspArgAspTyrLeuPheMetGlyLysGlnLeuArgHisPheLeuLysHisGly	600
OY	1798	ATCTTAATCACTTAAGGTTTCTCTTCAAGAGATGCTCTCTGTGTGGGAGAGAGAGCC	1857
Db	601	IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGlnIleAla	620
OY	1858	CCAGAGAAATATGTATACAGACACATCCAGCTTCATGCGCCAGCGAGTGGCAAGATCTC	1917
Db	621	ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlnGlnGlnIleAlaArgIleLeu	640
OY	1918	CTCCAGAGAAACGGCATATTATGTGTGTGAGATGCAAGAAATATGCGCAAGATGTA	1977
Db	641	LeuGlnGlnAsnGlnHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal	660
OY	1978	CATGATGCGCTTGTGCAAAATATAGCAAGAGGTTGAGTTGAAAACTAGAGACATG	2037

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Db      661 HisapAlaLeuValGlnIleIleSerLysGluValGlyValGlnLysLeuGluValMet 660
OY      2038 AAACCCGCGCCACTTTAAAGAGAGAAAAAGCTACCTTCAGAGATATTTGGTCA 2091
Db      681 LysThrLeuAlaThrLeuLysGluGluLysAlaGlyLeuGlnAspIleTrpSer 698

RESULT 5
US-09-371-347A-44
/ Sequence 44, Application US/09371347A
/ GENERAL INFORMATION:
/ APPLICANT: Gravel, Roy A,
/ APPLICANT: Rozen, Rima
/ APPLICANT: Leclerc, Daniel
/ APPLICANT: Wilson, Aaron
/ APPLICANT: Rosenblatt, David
/ TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
/ TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUB
/ TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
/ FILE REFERENCE: 50004/003003
/ CURRENT APPLICATION NUMBER: US/09/371,347A
/ PRIOR FILING DATE: 1999-08-10
/ PRIOR APPLICATION NUMBER: 09/232,028
/ PRIOR FILING DATE: 1999-01-15
/ PRIOR APPLICATION NUMBER: 60/071,622
/ PRIOR FILING DATE: 1998-01-16
/ NUMBER OF SEQ ID NOS: 61
/ SOFTWARE: FastSeq for Windows Version 4.0
/ SEQ ID NO: 44
/ LENGTH: 698
/ TYPE: PRT
/ ORGANISM: Homo sapiens
US-09-371-347A-44

Alignment Scores:
Pred. No.:      5,97e-67      Length:      698
Score:          3599.50      Matches:      696
Percent Similarity: 99.71%      Conservative: 0
Best Local Similarity: 99.71%      Mismatches: 1
Query Match:      95.63%      Indels:      1
DB:              1          Gaps:         1

US-09-371-347a-45 (1-2094) x US-09-371-347A-44 (1-698)
OY      1 ATGAGAGAGTTTCTGTGTACTATATGCTACACAGCAGGGAAGGCAATCGCAGAA 60
Db      1 MetArgArgPheLeuLeuLeuLysTrAlaThrGlnGlnGlnAlaLysAlaIleAlaGlu 20
OY      61 GAAATGATGAGCAAGCTGTGGTACATGAGATTTCTGCAGATCTTCACTGTATTGATGA 120
Db      21 GluMetCysGluGlnAlaValAlaHisGlyPheSerAlaAspLeuHisThrIleSerGlu 40
OY      121 TCCGATAAGTAGACTTAAAAACCGAAACAGCTCCTCTGTGTGTGTGGTTTCTACACAG 180
Db      41 SerAspLysTrpAspLeuLysThrGlnThrAlaProLeuValAlaValAspSerThrThr 60
OY      181 GGCACCGGAGACCCACCCGACACAGCCCGGCAAGTTTGTTAAGAAATACAGAACCAACA 240
Db      61 GlyThrGlyAspProProAspPheThrAlaTrgLysPheValLysGluIleGlnAsnGlnThr 80
OY      241 CTGCCGATTGATTCTTTGTTGCTCACCTCGGATAGGTTAGTGGCTCGGATTCAGAA 300
Db      81 LeuProValaAspPhePheAlaHisIleuArgTrgGlyLeuLeuGlyLeuGlnLysAspSerGlu 100
OY      301 TACACCTTACTTTTGCATATGGGAGGAGATTAATTGATTAACGACTTCAAGAGCTTGAGCC 360
Db      101 TyrThrTrpTrpCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlnLysGlyAla 120
OY      361 CGGACTTTCTATGACACTGGAACATGCAATGACTGTGTAAGTTTGAAGCTTGTGGTTGAG 420
Db      121 ArgHisPheTrpAspThrGlyHisAlaAspAspCysValGlyLeuGlnLeuValAlaGlu 140
OY      421 CCGGAGATTGTGGACTCTGCGCAAGCCCTCAGAAAGCATTTTAAAGTCAAGACAGACAA 480

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Db      141  ProTriLeaIaGlyLeuTriProAlaLeuArgLyShiSPhearGserArgGlyGln 160
Qy      481  GAGAGATTAAGTGGCGACTCCGGTGGCATCCTGATCCTTGAGGAGACAGACTTGTG 540
Db      161  GlnGlnIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
Qy      541  AAGTCAGAGCTGTACACATTTGAATCTCAAGTCAGCTTTCAGATTGATGATTCAGGA 600
Db      181  LysSerIleuLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
Qy      601  AGAAGAGATTCTGAGGTTTGTAGAGCAAAATGCAGTGAACAGCAACCAATCCATGTTGA 660
Db      201  ArgLyAspSerGlnValLeuLyGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
Qy      661  ATTGAAGACTTGTGCTCTACCTTACCCGTTGGTACCCCTCAGCTCAGAGCTCTG 720
Db      221  IleGlnAspPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Qy      721  AATATTCCTGGTTTACCCCGAGAAATATTATACAGGTACATTCAGAGAGTCTTGGCCAG 780
Db      241  AsnIleProGlyLeuProProGlnIleuGlnValHisLeuGlnGlnSerLeuGlyGln 260
Qy      781  GAGAAAGCCAGATATCTGTGACTTCAGCAGATCCAGTTTTCAGTGCATTTTCAAG 840
Db      261  GlnGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLyS 280
Qy      841  GCAGTTCACTTACTATAGAAATGATGCCATTAACCACTCTGCTGCTGATGATTTGACATT 900
Db      281  AlaValGlnLeuThrThrAsnAspAlaIleLySerThrLeuLeuValGlnLeuAspIle 300
Qy      901  TCAATATCAGACTTTTCTATCAGCTGTGAGATGCTTTCAGCTGATGCTGCTTAAACAGT 960
Db      301  SerAsnThrAspPheSerTyGlnProGlyAspAlaPheSerValIleCyProAsnSer 320
Qy      961  GATTCTGAGGTACAAAGCTTATCTCCAAAGACTGTGAGATTAAGATTAAGAGACACTGC 1020
Db      321  AspSerGlnValGlnSerLeuGlnInArgLeuGlnLeuGlnAspLyArgGlnHisGlyS 340
Qy      1021  GTCCCTTTTGAATAAAGGCGACACAAAGAAAGAGAGCTACTTACCCGACATATA 1080
Db      341  ValLeuLeuLySlyIleLySlyAlaAspThrLySlySglYalAlaThrLeuProGlnHisIle 360
Qy      1081  CTTGCGGGATGTTCTCTCCAGTTTCTTACTGTTGCTGTGTAATCCGACAAATTCCT 1140
Db      361  ProIleGlyCySserLeuGlnPheIlePheThrTyCySleuGlnIleArgAlaIlePro 380
Qy      1141  AAAAAGGCATTTTGTGCGAGCCCTGTGAGACTATACAGATGACAGTGTGAAAAGCGCAGG 1200
Db      381  LysLySlyAlaPheLeuAlaGlnAlaLeuValAspTyThrSerAspSerAlaGlnLySArg 400
Qy      1201  CTACAGAGAGCTGTGCGAGTAAACAAAGGGGACCCGATTTATACCCGCTTTTATCGAGATGCC 1260
Db      401  LeuGlnGlnLeuCySserLySglGlnYAlaAlaAspTySerAspPheValArgAspAla 420
Qy      1261  TGTGCGCTGTTGTTGATCTCTCTCTGCTTCCCTTCTTCCGACGACACAGCTAGTCTC 1320
Db      421  CySlyAlaCySleuLeuAspLeuLeuValAlaPheProSerCySglNProProLeuSerLeu 440
Qy      1321  CTGCTCGAAGCATTTCTCTAAACTTCAACCCAGACCATATTTGTGTGCAAGCTCAAGTTTA 1380
Db      441  LeuLeuGlnHisLeuProLySLeuGlnProArgProTySerCySAlaSerSerLeu 460
Qy      1381  TTTTCAACCGAGAAAGCTTCATTTGTCTTCAACATTTGTGAATTTGTCTTACTGCCACA 1440
Db      461  PheHisProGlyLySLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
Qy      1441  ACAGAGGTTTCTGGGAGGAGAGTATGTACAGAGCTGGCTGGCTTGTGTTGCTTCAGTT 1500
Db      481  ThrGlnValLeuAlaGlySglYValCySThrGlyTyPheAlaLeuLeuValAlaSerVal 500
Qy      1501  CTTGAGCGAAACATATCATCATCCATGACAGACAGCGGAAAGCCCTGAGCTCTTAAGATA 1560
Db      501  LeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLySAlaLeuAlaProLySlyIle 520

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Qy      1561  TCCATCTCTCCGACAAACAATTTCTTCCACTTACAGATGACCCCTCATCCCATC 1620
Db      521  SerIleSerProAlaGlnThrThrAsnSerPheHisIleuProAspProSerIleProIle 540
Qy      1621  ATAAATGTGGGTCCAGGAACCGGATAGACCCCGTTTATATGGGTTCTTACCAATAGAGAG 1680
Db      541  IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGln 560
Qy      1681  AAATCTCAAGAAACAACCCAGATGAAATTTTGGACCAATGNG---TTTTTGGCTGC 1737
Db      561  LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaMetTyPheLeuPheGlyCyS 580
Qy      1738  AGCGATAGAGATAGAGATTTCTTATTCAGAAAAGAGCTCAGACATTTCTTAAGCATGGG 1797
Db      581  ArgHisLySAspArgAspTyTyLeuPheArgLySglLeuArgHisPheLeuLyHisGly 600
Qy      1798  ATCTTAATCATCTTAAAGTTTCTCTTCTCAAGAGATCTCTGTGGGAGAGAGAAAGCC 1857
Db      601  IleLeuThrHisLeuLySValSerPheSerArgAspAlaProValGlyGlnGlnVala 620
Qy      1858  CCAGCAAGATATGTACAAAGACATATCCAGTTTATGCGCAGCAGGTGGGAGAAATCTTC 1917
Db      621  ProAlaLySlyTyValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
Qy      1918  CTCGAGAGAAACGGCATATTTATGTGTGTGAGATGCAAAAGATATGAGCCAGATGTA 1977
Db      641  LeuGlnGlnAsnGlyHisIleTyValCySglYAspAlaLySAsnMetAlaLySAspVal 660
Qy      1978  CATGATGCCCTTGTGCATTAATATTAAGCAAAAGAGGTGGAGTTGAAAATAGAACATG 2037
Db      661  HisAspAlaLeuValGlnIleIleSerLyGlnValGlyValGlnLySLeuGlnAlaMet 680
Qy      2038  AAAACCTCGGCCACTTTTAAAGAAAGAAAGCGTACCTTCAGATATTTGGTCA 2091
Db      681  LysThrLeuAlaThrLeuLySglGlnLySArgTyxLeuGlnAspIleTyPser 698

RESULT 6
US-09-371-347A-48
: Sequence 48, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A.
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371.347A
: PRIOR FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 48
: LENGTH: 689
: TYPE: PRF
: ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 2,42e-64 Length: 689
Score: 3461.50 Matches: 686
Percent Similarity: 98.42% Conservative: 1
Best Local Similarity: 98.28% Mismatches: 10
Query Match: 91.96% Indels: 7
DB: 1 Gaps: 7

us-09-371-347A-45 (1-2094) x US-09-371-347A-48 (1-689)

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[illegible]

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; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 41
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-60

Alignment Scores:
Pred. No.: 0.0444 Length: 41
Score: 215.00 Matches: 41
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 5.71% Indels: 0
DB: 1 Gaps: 0

US-09-371-347A-45 (1-2094) X US-09-371-347A-60 (1-41)

QY 1855 GCCCCAGCAAGTATGTACAGACACATCCAGGTCACGCCAGAGTGCCAGAGATC 19144
Db 1 AlaprhoalstlyrvalGlnaspAmllleglnleuhtsglynglnvalAlaarglle 20

QY 1915 CTCTCCAGAGAAACGGCCATATTATTATGTGTGTGAGATGCAAGAAATATAGCCCAAGAT 19744
Db 21 leuLeuGnglnuAmsnglyhAisiletyrValCysgllyspAlatAlasAmelAlatAlasasp 40

QY 1975 GTA 1977
Db |||
41 Val 41

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-54

Alignment Scores:

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DB      1 LeuGlnProArgProTyrSerCyAlaSerSerLeuPheHisProGlyLeu 19
RESULT 14
US-09-371-347A-52
; Sequence 52, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 52
; LENGTH: 20
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:      11.7      Length:      20
Score:          100.00    Matches:      20
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:     2.66%   Indels:      0
DB:              1       Gaps:        0

us-09-371-347A-45 (1-2094) x US-09-371-347A-52 (1-20)

QY      10 TTTCGTACTATATGCTACACAGCGAGCGCAAGCCATCGCAGAAATGTGT 69
DB      1 PheLeuLeuLeuTyrAlaThrGlnGlnGlyClnAlaLysAlaIleAlaGluGluMetCys 20

RESULT 15
US-09-371-347A-25
; Sequence 25, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 25
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-25

Alignment Scores:
Pred. No.:      16.1      Length:      18
Score:          94.50    Matches:      17
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:     2.66%   Indels:      0
DB:              1       Gaps:        0
```

```
Percent Similarity: 94.44% Conservative: 0
Best Local Similarity: 94.44% Mismatches: 0
Query Match: 2.51% Indels: 1
DB: 1 Gaps: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-25 (1-18)

QY      1714 GGAGCATGTGG--TTTGTGGCTGCAGCGCATAGAGATGATTCATTC 1764
DB      1 GlyAlaMetTrpLeuPhePheGlyCyArgHisIleAspArgAspTyrLeuPhe 18

RESULT 16
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. No.:      23.2      Length:      17
Score:          87.00    Matches:      17
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:     2.31%   Indels:      0
DB:              1       Gaps:        0

us-09-371-347A-45 (1-2094) x US-09-371-347A-57 (1-17)

QY      1450 CTGGGAGGAGATGATGTACAGCGCTGCGCTGTGTGCTTCAGTT 1500
DB      1 LeuArgLysGlyValCysThrGlyTrpLeuAlaIleuValAlaSerVal 17

RESULT 17
US-09-371-347A-56
; Sequence 56, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
```

```

; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56

```

Alignment Scores:	
pred.	target
Score: 60.1	Length: 14
Score: 68.00	Matches: 14
Percent Similarity: 100.00%	Conservative: 0
Best Local Similarity: 100.00%	Mismatches: 0
Query Match: 1.81%	Indels: 0
DB: 1	Gaps: 0

US-09-371-347a-45 (1-2094) x US-09-371-347A-56 (1-14)

Oy	1402	TTTGTCCTTCAACATYGTGGAAATTTCTGTCYACTGCCACAACA	1443
Db	1	PheValPheAsnIleValGluPheLeuSerThrAlaThrThr	14

RESULT 18  
US-09-371-347A-22

```

? Sequence 22 Application US/0937347A
? GENERAL INFORMATION:
? APPLICANT: Gravel, Roy A,
? APPLICANT: Rozen, Rima
? APPLICANT: Leclerc, Daniel
? APPLICANT: Wilson, Aaron
? APPLICANT: Rosenblatt, David
? TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
? TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF
? TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
? FILE REFERENCE: 50004/003003
? CURRENT APPLICATION NUMBER: US/09/371,347A
? CURRENT FILING DATE: 1999-08-10
? PRIOR APPLICATION NUMBER: 09/232,028
? PRIOR FILING DATE: 1999-01-15
? PRIOR APPLICATION NUMBER: 60/071,622
? PRIOR FILING DATE: 1998-01-16
? NUMBER OF SEQ ID NOS: 61
? SOFTWARE: FastSeq for Windows Version 4.0
? SEQ ID NO 22
? . LENGTH: 682
? . TYPE: PRT
? ORGANISM: Caenorhabditis elegans

```

Alignment Scores:	
Pred. No.:	2.84
Score:	61.50
Percent Similarity:	33.27%
Best Local Similarity:	21.61%
Query Match:	1.65%
DB:	1
Length:	682
Matches:	113
Conservative:	61
Mismatches:	175
Indels:	175
Gaps:	29

US-09-371-347a-45 (1-2094) X US-09-371-347A-22 (1-682)

QY	1353	TCTGGATTGAAGTTTAGGAATG---	TTGACAGAGAGACTGAGTGTGCTGGCAAGA	1297
		.....	.....	.....
Db	168	SerSrnLeuIuylbLeuSrnGlnVallyeThrgInGInGInlybLysAlaLeuLeuGlnIms		187
QY	1296	AGGAAAGCCGAGAGAGAGATCCAA	CAAGACAGGACAGGCACTCTGTACAAAGCGCTVTA	1237
		.....	.....	.....
Db	188	ArgIleGlnaSpGInuSerAspAspGInuIuArgIly-----	ArgVal	202
QY	1236	ATCGGCTGCCCTTGTATTACGACAGCTCCTGAGCTCGGCTTTTCAGCAGCTGCACT		1177
		.....	.....	.....
Db	203	Ileely-----	IleAspMetLeuIleProGInuHisTyrAspTyrProGInu	217
QY	1176	GGATAGTCCACAAAGGCTCGCAAAATATGCTTTTAGAATTCGCGAATTTCAAGACA		1117
		.....	.....	.....
	218	IleSerLeuIuylbGlySerGInI-----	Thr	226

QY	1116	CCAGGTAAAAATGAACTGAGAGAAACATCCCGCAGATATATCTGGGGTAAAGTAGCTCC	105
Db	227	LeuSerAenAspGluAsnLeuIarVal_Pro-----IleAlaIar	239
QY	1056	TTTCTCTTGGTGTCGCTTTATTTTCAAAAGGACGACGTCCTCTTTATCTTTCAAG	997
Db	239	OglInProheIleValSerSerValSerAsnArg-----LysLeuProGluAspTh	256
QY	936	CTGACGCTTTGAGAGTAGGCTTTTGACTCTCAAGATCACTGTAAAGGACAGATCCGTGAA	937
Db	256	LysLeuGluIutIrgGlnAsnLeuCyS-----LysMetProGluValValThr-----	271
QY	936	GGCATCTCCAGGCTGATGAGAAAGTCTGTATTTGAAATGTCCAAATCTCTACACAGAGT	877
Db	272	-----LysProheGluVal-----Le	277
QY	876	GGTTTTATGCGATCATTCGTAGTAAGTTGAATCGCTTGTGAAATGGCATTGCAATGAAC	817
Db	277	uValValSerIleValIuIuPheValThIarProPheSerLysLysIleuThrIlySarGMe	297
QY	816	TGGATCTCTGAAAGTCAAGAT-----ACTGGCTTTCCTCTGGGCCAAGAGTCC--	765
Db	297	IleThrValAspPheGluAspH:sAlaIaGluLeuGlnIlyGluIuProGluAspAlaI1	317
QY	764	-----TGC-----AGATGTACTGT	751
Db	317	eTyI:PheYsValProAsnProAlaLeuGluValAsnPheIleuLysSarCyS-----	335
QY	750	TAAATATTCTGGGGGTAAACAGAAATATTCAGAGAGGCTTGAG-----AGTGG	700
Db	336	-----GlyValLeuAspI1eAlaAspGlnGlnCysGluLeuSerIleAsnPr	351
QY	699	GGGTACCGAAGGGTAAAGTGAAGCTCAAAAGTCT-----TCAATTCAACATTGGA	649
Db	351	olysThrGluLysIleAsnAlaGlnIleProGluYHisValHisLysIleThrIleuAr	371
QY	648	TTTGTTGCTGTTCACCTGCATTTTCTTCAAAACCTCAAGATCTTTCTTCGTGAATCATC	589
Db	371	GHisMetPheThrThrCysLeuAspI1eArgArgAlaProIly--ArgProLeuI1eAr	390
QY	588	GAATCTCGAAGCTCGACCTTGAGAT-----TCAATGCTTAG	553
Db	390	GValIleuAgluSerThrSerAsnProAsnGlnLysArgIleuGluLeuCySse	410
QY	552	CAGC-----TCTGACTTCACAGGCTGTCTCTCTCAAGATGACAGTGA	511
Db	410	AlaGlnGluMetLysAspPheThrAspPheValArgThrProGluLeuSerIleuAlaAs	430
QY	510	TGCCACCGGAGTGCGCATTATCTCTCTGTTCCTCTGTTGAC-----CTAAATG	457
Db	430	PmetLeuPheAlaPheProAsnValLys-----ProProValAspArgIleuIleGluLe	448
QY	456	CTTTCTGAGGCTGGCAGAGTCCAGCAATCCACGCGCTCAACACAGATTCTAACTAC	397
Db	448	uLeuProArgIleuLeuProArgProIySerMetSerIyGlnLysnArgLys-----	466
QY	396	ACAAGTCATCTGCATGTCCAAGTGTCAATGAATGCGGACTTCAGACTCTTGAAAGTCTTT	337
Db	467	-----AlaArgLe	469
QY	336	ATCAATTATCTCCCCCATTTGCCAAAAGTAGGTATCTTGAAATCCACGAGACCCCAATA	277
Db	469	u-----IleIySerGluMetGluPheProAlaTh	479
QY	276	CCCATACCGAGGTGAGCAAGAATCAACCGCAGATGTTTGTTCTGTATTTCTTCAAC	217
Db	479	rAspGluYArgArgHisSerArgLysGluLeuAlaThrAspTrp-----LeuAs	495
QY	216	AAACTTTCGG-----GCTGTGTGGGTGGGTCTCCGGTG-----	183
Db	495	nSerLeuArgI1eGluAspLysValGlnValIleuGluLysGluProAlaArgPheArgLe	515
QY	182	-----CCCGTGGTGAACCAACCAACACAAAGGA-----	153

```

Db      515 uProProLeuclYmethrlysaenseAlaGlyLysLeuProLeuLeuMetValGlyPr 535
      |||::: |||
      |||::: |||
Qy      152 -----GCTGTTGGCTGTTTATGCTACTTAA----- 126
      |||::: |||
      |||::: |||
Db      535 oglyThrglyValserValPheLeuSerPheLeuHishPheLeuArgLysLeuYsglnas 555
      |||::: |||
      |||::: |||
Qy      125 -----TCCGA-TTCACTATACAGTGAAGATC-----TCCAGAAAATCC-- 88
      |||::: |||
      |||::: |||
Db      555 pSerProSerAspPheValAspValProArgValLeuPhePheGlyCysArgAspSerSe 575
      |||::: |||
      |||::: |||
Qy      87 -----ATGTACACACAGCTTGTCTACACATTTCTTCGATGCGCTTTCCTGTC 38
      |||::: |||
      |||::: |||
Db      575 rValAspAlaIleTyrtmetSerGluLeuGluMetPheValSerGluGlyIleLeuThrAs 595
      |||::: |||
      |||::: |||
Qy      37 CCTGCTG 31
      |||:::
      |||:::
Db      595 pleuile 597

RESULT 19
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30

Alignment Scores:
Pred. No.: 87.4 Length: 18
Score: 53.00 Matches: 8
Percent Similarity: 76.92% Conservative: 2
Best Local Similarity: 61.54% Mismatches: 3
Query Match: 1.41% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-30 (1-18)
Qy      1726 TTTTGGCTGCGAGCATTAAGATAGGATTAATCTATTC 1764
      |||::: |||
      |||::: |||
Db      6 PhepheglyCysArgLysSerAspGluAspPheLeuTy 18

RESULT 20
US-09-371-347A-26
; Sequence 26, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003

```

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; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 26
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-26

Alignment Scores:
Pred. No.: 90.8 Length: 18
Score: 52.00 Matches: 7
Percent Similarity: 76.92% Conservative: 3
Best Local Similarity: 53.85% Mismatches: 3
Query Match: 1.38% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-26 (1-18)
Qy      1726 TTTTGGCTGCGAGCATTAAGATAGGATTAATCTATTC 1764
      |||::: |||
      |||::: |||
Db      6 TyrtlyglyCysArgLysSerAspGluAspTyrtleuTy 18

RESULT 21
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29

Alignment Scores:
Pred. No.: 90.8 Length: 18
Score: 52.00 Matches: 7
Percent Similarity: 81.25% Conservative: 6
Best Local Similarity: 43.75% Mismatches: 3
Query Match: 1.38% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-29 (1-18)
Qy      1717 GCATGTGTTTGGCTGCGAGCATTAAGATAGGATTAATCTATTC 1764
      |||::: |||
      |||::: |||
Db      3 AlaLeuLeuPhePheGlyCysArgAsnArgGlnMetAspHeIleTy 18

RESULT 22
US-09-371-347A-61
; Sequence 61, Application US/09371347A
; GENERAL INFORMATION:

```

```

; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 61
; LENGTH: 9
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-61

Alignment Scores:
Pred. No.: 721          Length: 9
Score: 51.00           Matches: 9
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.35%      Indels: 0
DB: 1                  Gaps: 0

```

us-09-371-347a-45 (1-2094) x US-09-371-347A-61 (1-9)

```
QY      2065 AAAGCTACCTCAGATATTGTGTC 2091
Db      1 LysargTyrenuGlnAspIleTPSer 9

```

RESULT 23

```

US-09-371-347A-35
; Sequence 35, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 35
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Gallus gallus
US-09-371-347A-35

```

```

Alignment Scores:
Pred. No.: 94.2          Length: 18
Score: 51.00           Matches: 7
Percent Similarity: 83.33%  Conservative: 3
Best Local Similarity: 58.33%  Mismatches: 2
Query Match: 1.35%      Indels: 0
DB: 1                  Gaps: 0

```

us-09-371-347a-45 (1-2094) x US-09-371-347A-35 (1-18)

```
QY      1729 TTGGCTGCGAGCATAGATAGATATTCATTC 1764
Db      7 PheGlyCysArgHisProAspMetAspHisIleTyr 18

```

```

RESULT 24
US-09-371-347A-34
; Sequence 34, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-34

```

```

Alignment Scores:
Pred. No.: 97.8          Length: 18
Score: 50.00           Matches: 7
Percent Similarity: 83.33%  Conservative: 3
Best Local Similarity: 58.33%  Mismatches: 2
Query Match: 1.33%      Indels: 0
DB: 1                  Gaps: 0

```

us-09-371-347a-45 (1-2094) x US-09-371-347A-34 (1-18)

```
QY      1729 TTGGCTGCGAGCATAGATAGATATTCATTC 1764
Db      7 PheGlyCysArgHisProGluGlnAspHisIleTyr 18

```

RESULT 25

```

US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-48

```



## Alignment Scores:

Pred. No.: 4.19 Length: 698  
Score: 49.50 Matches: 17  
Percent Similarity: 38.46% Conservative: 8  
Best Local Similarity: 26.15% Mismatches: 21  
Query Match: 1.33% Indels: 19  
DB: 1 Gaps: 2

us-09-371-347a-45 (1-2094) x US-09-371-347a-2 (1-698)

QY 1891 GAAGCTGAGTGTCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1832  
Db 419 AspaIaCysaIaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438  
QY 1831 CTCTTGAGAGAAACCTTAGATGAGTTAGATCCATGCTTAAGAAATGCTGAGCT 1772  
Db 439 SerLeuLeuLeuGlnHsLeuProLysLeuGln----- 449  
QY 1771 CTCTTGAGATAGATAATCCCTTATCCTTAGCCTGACGCAAAAACCATTTGCTCAA 1712  
Db 450 -----ProArgProTyrSerCysAlaSerSerLeu----- 460  
QY 1711 AATTCCATCTGGGT 1697  
Db 461 ---PheHisProGly 464

## RESULT 28

US-09-371-347a-21

; Sequence 21, Application US/09371347A  
; GENERAL INFORMATION:  
; APPLICANT: Gravel, Roy A,  
; APPLICANT: Rozen, Rima  
; APPLICANT: Leclerc, Daniel  
; APPLICANT: Wilson, Aaron  
; APPLICANT: Rosenblatt, David  
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
; FILE REFERENCE: 50004/003003  
; CURRENT APPLICATION NUMBER: US/09/371,347A  
; PRIOR FILING DATE: 1999-08-10  
; PRIOR APPLICATION NUMBER: 09/232,028  
; PRIOR FILING DATE: 1999-01-15  
; PRIOR APPLICATION NUMBER: 60/071,622  
; PRIOR FILING DATE: 1998-01-16  
; NUMBER OF SEQ ID NOS: 61  
; SOFTWARE: FastSeq for Windows Version 4.0  
; SEQ ID NO 21  
; LENGTH: 698  
; TYPE: PRT  
; ORGANISM: Homo sapiens  
US-09-371-347a-21

## Alignment Scores:

Pred. No.: 4.19 Length: 698  
Score: 49.50 Matches: 17  
Percent Similarity: 38.46% Conservative: 8  
Best Local Similarity: 26.15% Mismatches: 21  
Query Match: 1.33% Indels: 19  
DB: 1 Gaps: 2

us-09-371-347a-45 (1-2094) x US-09-371-347a-21 (1-698)

QY 1891 GAAGCTGAGTGTCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1832  
Db 419 AspaIaCysaIaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438  
QY 1831 CTCTTGAGAGAAACCTTAGATGAGTTAGATCCATGCTTAAGAAATGCTGAGCT 1772  
Db 439 SerLeuLeuLeuGlnHsLeuProLysLeuGln----- 449  
QY 1771 CTCTTGAGATAGATAATCCCTTATCCTTAGCCTGACGCAAAAACCATTTGCTCAA 1712  
Db 461 ---PheHisProGly 464

Db 450 -----ProArgProTyrSerCysAlaSerSerLeu----- 460

QY 1711 AATTCCATCTGGGT 1697  
Db 461 ---PheHisProGly 464

## RESULT 29

US-09-371-347a-42

; Sequence 42, Application US/09371347A  
; GENERAL INFORMATION:  
; APPLICANT: Gravel, Roy A,  
; APPLICANT: Rozen, Rima  
; APPLICANT: Leclerc, Daniel  
; APPLICANT: Wilson, Aaron  
; APPLICANT: Rosenblatt, David  
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
; FILE REFERENCE: 50004/003003  
; CURRENT APPLICATION NUMBER: US/09/371,347A  
; PRIOR FILING DATE: 1999-08-10  
; PRIOR APPLICATION NUMBER: 09/232,028  
; PRIOR FILING DATE: 1999-01-15  
; PRIOR APPLICATION NUMBER: 60/071,622  
; PRIOR FILING DATE: 1998-01-16  
; NUMBER OF SEQ ID NOS: 61  
; SOFTWARE: FastSeq for Windows Version 4.0  
; SEQ ID NO 42  
; LENGTH: 698  
; TYPE: PRT  
; ORGANISM: Homo sapiens  
US-09-371-347a-42

## Alignment Scores:

Pred. No.: 4.19 Length: 698  
Score: 49.50 Matches: 17  
Percent Similarity: 38.46% Conservative: 8  
Best Local Similarity: 26.15% Mismatches: 21  
Query Match: 1.33% Indels: 19  
DB: 1 Gaps: 2

us-09-371-347a-45 (1-2094) x US-09-371-347a-42 (1-698)

QY 1891 GAAGCTGAGTGTCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1832  
Db 419 AspaIaCysaIaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438  
QY 1831 CTCTTGAGAGAAACCTTAGATGAGTTAGATCCATGCTTAAGAAATGCTGAGCT 1772  
Db 439 SerLeuLeuLeuGlnHsLeuProLysLeuGln----- 449  
QY 1771 CTCTTGAGATAGATAATCCCTTATCCTTAGCCTGACGCAAAAACCATTTGCTCAA 1712  
Db 450 -----ProArgProTyrSerCysAlaSerSerLeu----- 460  
QY 1711 AATTCCATCTGGGT 1697  
Db 461 ---PheHisProGly 464

## RESULT 30

US-09-371-347a-44

; Sequence 44, Application US/09371347A  
; GENERAL INFORMATION:  
; APPLICANT: Gravel, Roy A,  
; APPLICANT: Rozen, Rima  
; APPLICANT: Leclerc, Daniel  
; APPLICANT: Wilson, Aaron  
; APPLICANT: Rosenblatt, David  
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
; FILE REFERENCE: 50004/003003  
; CURRENT APPLICATION NUMBER: US/09/371,347A



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; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-44

Alignment Scores:
Pred. No.: 4.19      Length: 698
Score: 49.50      Matches: 17
Percent Similarity: 38.46%      Conservative: 8
Best Local Similarity: 26.15%      Mismatches: 21
Query Match: 1.33%      Indels: 19
DB: 1      Gaps: 2

us-09-371-347A-45 (1-2094) x US-09-371-347A-44 (1-698)

QY 1891 GAAGCTGATGTTCTTGTACATCTTGTGGGCTTCTCTCCCAAGAGACAT 1832
    ||||| ||||| ||||| ||||| |||||
DB 419 Asplacysalacysleuleuapleuleuhalpheprosercysglnproleu 438
QY 1831 CTCTTGAGAGAAACCTTTAGATGAGTTAGATCCATGCTTAGAGAAATGTTGAGCT 1772
    ||||| ||||| ||||| ||||| |||||
DB 439 SerleuleuleugluhileuProlyleuGln----- 449
QY 1771 CTTTTCGATGATGATATCCCTATCCCTGAGCCGAGCAAAAACCAATTCCTCAA 1712
    ||||| ||||| ||||| ||||| |||||
DB 450 -----ProargprolysercysalaserSerleu----- 460
QY 1711 AATTTCCATCTGGGT 1697
    ||||| ||||| |||||
DB 461 ---PhehisProgly 464

RESULT 31
US-09-371-347A-23
; Sequence 23, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 23
; LENGTH: 677
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-23

Alignment Scores:
Pred. No.: 4.37      Length: 677
Score: 49.00      Matches: 20
Percent Similarity: 45.12%      Conservative: 17
Best Local Similarity: 24.39%      Mismatches: 27
Query Match: 1.31%      Indels: 18
DB: 1      Gaps: 4
```

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us-09-371-347A-45 (1-2094) x US-09-371-347A-23 (1-677)

QY 695 ACCGAACGGGTAACTGAGACTCAAGCTTTCATTTCAACATTGATGTTGCTGTC 636
    ||||| ||||| ||||| ||||| |||||
DB 13 SerleuhalvalhalgluGln---ValSerleuPheserleuThraapmetileleuPhe 31
QY 635 ACTGCA-----TTTGTCTTCAAAACCTCAGAACTCTTCTT 600
    ||||| ||||| ||||| ||||| |||||
DB 32 SerleuleuValglyleuleuThrTyTrpPheleuPheargylslysgluGlnVal 51
QY 599 CCGAATCATCGAATCTCAGAGCTCGACTGAGATTCAATGTGTACACCTGACTTC 540
    ||||| ||||| ||||| ||||| |||||
DB 52 ProgluPheThrlyslieglnThrleuThr-----SerleuValargluserPhe 69
QY 539 ACA-----AGCTCTGCTCTCAAGATGAGGTGATGCCACCGG 501
    ||||| ||||| ||||| ||||| |||||
DB 70 ValgluPheMetlyslslyThrlyArgasnleleValPheTyrglyserGlnThrGly 89
QY 500 AGTGGC 495
    |||||
DB 90 ThrAla 91

RESULT 32
US-09-371-347A-28
; Sequence 28, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Drosophila melanogaster
; US-09-371-347A-28

Alignment Scores:
Pred. No.: 105      Length: 18
Score: 48.00      Matches: 6
Percent Similarity: 76.92%      Conservative: 4
Best Local Similarity: 46.15%      Mismatches: 3
Query Match: 1.28%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347A-45 (1-2094) x US-09-371-347A-28 (1-18)

QY 1726 TTTTGGCTGAGGATAGGATAGGATATATCTATTC 1764
    ||||| ||||| ||||| ||||| |||||
DB 6 TyPheglYcysArglyArgSerGluAspTyrIleTyR 18

RESULT 33
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
```

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; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32

Alignment Scores:
Pred. No.: 121      Length: 18
Score: 44.00      Matches: 6
Percent Similarity: 75.00%      Conservative: 3
Best Local Similarity: 50.00%      Mismatches: 3
Query Match: 1.17%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347A-45 (1-2094) x US-09-371-347A-32 (1-18)
QY 1729 TTTGGCTGCAGCATTAAGGATTAATCTATTC 1764
Db 7 PheGlyCysArgGlyProAspGluAspHisIleTyr 18

RESULT 34
US-09-371-347A-27
; Sequence 27, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 27
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-27

Alignment Scores:
Pred. No.: 126      Length: 18
Score: 43.00      Matches: 6
Percent Similarity: 69.23%      Conservative: 3
Best Local Similarity: 46.15%      Mismatches: 4
Query Match: 1.14%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347A-45 (1-2094) x US-09-371-347A-27 (1-18)
QY 1726 TTTTGGCTGCAGCATTAAGGATTAATCTATTC 1764
Db 6 TyrTyrIleCysArgGlyAlaGluAspTyrIleTyr 18
```

```

RESULT 35
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thicapsa roseopersicina
US-09-371-347A-38

Alignment Scores:
Pred. No.: 128      Length: 18
Score: 42.50      Matches: 9
Percent Similarity: 61.11%      Conservative: 2
Best Local Similarity: 50.00%      Mismatches: 6
Query Match: 1.13%      Indels: 1
DB: 1      Gaps: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-38 (1-18)
QY 1714 GGAGCATGTGG--TTTGGCTGCAGCATTAAGGATTAATCTATTC 1764
Db 1 GlYArgAsnTyrPheIlePheGlyAsnArgHisPheHisArgAspPheIleTyr 18

RESULT 36
US-09-371-347A-37
; Sequence 37, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 37
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Saccharomyces cerevisiae
US-09-371-347A-37

Alignment Scores:
Pred. No.: 139      Length: 18
Score: 40.00      Matches: 6
Percent Similarity: 69.23%      Conservative: 3
Best Local Similarity: 46.15%      Mismatches: 4
```

```
Query Match: 1.06% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-45 (1-2094) x US-09-371-347a-37 (1-18)

QY 1726 TTTTGGCTGCAGCATAGGATAGGATTAATCTATTC 1764
Db 6 Tyrlenglyserghiselysarglglutlytleutyr 18

RESULT 37
US-09-371-347a-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347a-36

Alignment Scores:
Pred. No.: 156 Length: 18
Score: 36.50 Matches: 8
Percent Similarity: 55.56% Conservative: 2
Best Local Similarity: 44.44% Mismatches: 7
Query Match: 0.97% Indels: 1
DB: 1 Gaps: 1

us-09-371-347a-45 (1-2094) x US-09-371-347a-36 (1-18)

QY 1714 GGAGCATGTG--TTTGGCTGCAGCATAGGATAGGATTAATCTATTC 1764
Db 1 Gyllysantirpneuphepneglyasnprohispherthrghuabpneleutyr 18

RESULT 38
US-09-371-347a-33
; Sequence 33, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 33
; LENGTH: 18
```

```
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-33

Alignment Scores:
Pred. No.: 159 Length: 18
Score: 36.00 Matches: 6
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 4
Query Match: 0.96% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-45 (1-2094) x US-09-371-347a-33 (1-18)

QY 1729 TTTGGCTGCAGCATAGGATAGGATTAATCTATTC 1764
Db 7 Pheglycysarglserglnleuabpneleutyr 18

RESULT 39
US-09-371-347a-31
; Sequence 31, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 31
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-31

Alignment Scores:
Pred. No.: 164 Length: 18
Score: 35.00 Matches: 5
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 41.67% Mismatches: 4
Query Match: 0.93% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-45 (1-2094) x US-09-371-347a-31 (1-18)

QY 1729 TTTGGCTGCAGCATAGGATAGGATTAATCTATTC 1764
Db 7 Pheglycysarglserglnleuabpneleutyr 18

RESULT 40
US-09-371-347a-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
```

```
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.: 156 Length: 19
Score: 35.00 Matches: 7
Percent Similarity: 52.63% Conservative: 3
Best Local Similarity: 36.84% Mismatches: 5
Query Match: 0.94% Indels: 4
DB: 1 Gaps: 1

US-09-371-347A-45 (1-2094) x US-09-371-347A-55 (1-19)

QY 1753 CCTATGCTTATGCTGCGAGCAAAACACATGCTCCAAATTCATCTGGGT 1697
Db 3 ProkaryoticSerCysAlaSerSerSerUen-----PheHisProGly 17

RESULT 41
US-09-371-347A-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347A-36

Alignment Scores:
Pred. No.: 191 Length: 18
Score: 30.00 Matches: 4
Percent Similarity: 85.71% Conservative: 2
Best Local Similarity: 57.14% Mismatches: 1
Query Match: 0.80% Indels: 0
DB: 1 Gaps: 0

US-09-371-347A-45 (1-2094) x US-09-371-347A-36 (1-18)

QY 1964 ATATCTTGTGATCTCCACAC 1944
Db 5 Leuphheq1ysnProHis 11

RESULT 42
US-09-371-347A-59
; Sequence 59, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
```

```
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 59
; LENGTH: 6
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-59

Alignment Scores:
Pred. No.: 1 Length: 6
Score: 1.08e+03 Matches: 6
Percent Similarity: 29.00 Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.77% Indels: 0
DB: 1 Gaps: 0

US-09-371-347A-45 (1-2094) x US-09-371-347A-59 (1-6)

QY 1819 TCCTCTCAAGAGATGCT 1836
Db 1 Serpheserrargaspala 6

RESULT 43
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

Alignment Scores:
Pred. No.: 164 Length: 22
Score: 29.00 Matches: 6
Percent Similarity: 60.00% Conservative: 0
Best Local Similarity: 60.00% Mismatches: 4
Query Match: 0.78% Indels: 0
DB: 1 Gaps: 0

US-09-371-347A-45 (1-2094) x US-09-371-347A-58 (1-22)
```

```
Qy      515 GGTGATGCAACGGAGTGGCCACTTATC 486
Db      7  GlyProGlyThrGlyIleAlaProPheIle 16

RESULT 44
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. No.:      213
Score:          28.00
Percent Similarity: 83.33%
Best Local Similarity: 50.00%
Query Match:    0.75%
DB:             1
Gaps:           0

us-09-371-347A-45 (1-2094) x US-09-371-347A-57 (1-17)
Qy      204 TGTGCGGTGGTCTCC 187
Db      6  CyethrGlyTrpLeuAla 11

RESULT 45
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30

Alignment Scores:
```

```
Pred. No.:      208
Score:          27.00
Percent Similarity: 66.67%
Best Local Similarity: 55.56%
Query Match:    0.72%
DB:             1
Gaps:           0

us-09-371-347A-45 (1-2094) x US-09-371-347A-30 (1-18)
Qy      626 TGTTCAAAACCTCAGATCTTTCTT 600
Db      9  CysArgLysSerAspGluAspPheLeu 17

Search completed: May 9, 2005, 15:33:08
Job time : 27.5 secs
```

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GenCore version 5.1.6  
Copyright (c) 1993 - 2005 CompuGen Ltd.

OM nucleic - protein search, using frame\_plus\_n2p model

Run on: May 9, 2005, 15:33:45 ; Search time 5.5 Seconds  
(without alignments)  
4.586 Million cell updates/sec

Title: us-09-371-347a-47

Perfect score: 3760  
Sequence: 1 atcagagagcttctgtact.....cttcagatattgltcataa 2093

Scoring table: BLOSUM62

Xgapop 10.0 , Xgapext 0.5  
Ygapop 10.0 , Ygapext 0.5  
Fgapop 6.0 , Fgapext 7.0  
Delop 6.0 , Delext 7.0

Searched: 34 seqs, 6026 residues

Total number of hits satisfying chosen parameters: 68

Minimum DB seq length: 0  
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Maximum Match 100%  
Listing first 45 summaries

Command line parameters:

-MODE=frame+n2p.model -DB=soft -Q=us-09-371-347a-47 -DB=US09371347a.pep  
-SUFFIX=pro -OUT=align47 -MINMATCH=0.1 -LOOPEXT=0 -UNIT=bits  
-START=1 -END=1 -MATRIX=blosum62 -TRANS=human40.cdi -LIST=45 -DOCALIGN=200  
-THR SCORE=pct -THR MAX=100 -THR MIN=0 -ALIGN=45 -MODE=LOCAL -OUTFMT=pro  
-NORM=ext -HEAPSIZE=500 -MINLEN=0 -MAXLEN=200000000 -NCPU=6 -NO XLEXY  
-NGC SCORES=0 -LONGLOG -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOF=6 -FGAPEXT=7  
-YGAPOF=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7

Database : US09371347a.pep\*

Pred. No. is the number of results predicted by chance to have a  
score greater than or equal to the score of the result being printed,  
and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	3590.5	95.5	698	1 US-09-371-347a-2	Sequence 2, App1
2	3590.5	95.5	698	1 US-09-371-347a-21	Sequence 21, App1
3	3586.5	95.4	698	1 US-09-371-347a-42	Sequence 42, App1
4	3580.5	95.2	698	1 US-09-371-347a-44	Sequence 44, App1
5	3576	95.1	697	1 US-09-371-347a-46	Sequence 46, App1
6	3504.5	93.2	689	1 US-09-371-347a-48	Sequence 48, App1
7	895.5	23.8	682	1 US-09-371-347a-22	Sequence 22, App1
8	713.5	19.0	677	1 US-09-371-347a-23	Sequence 23, App1
9	215	5.7	611	1 US-09-371-347a-60	Sequence 60, App1
10	158	4.2	29	1 US-09-371-347a-54	Sequence 54, App1
11	117	3.1	22	1 US-09-371-347a-58	Sequence 58, App1
12	116	3.1	23	1 US-09-371-347a-53	Sequence 53, App1
13	109	2.9	18	1 US-09-371-347a-25	Sequence 25, App1
14	104	2.8	19	1 US-09-371-347a-55	Sequence 55, App1
15	100	2.7	20	1 US-09-371-347a-52	Sequence 52, App1
16	87	2.3	17	1 US-09-371-347a-57	Sequence 57, App1
17	68	1.8	14	1 US-09-371-347a-56	Sequence 56, App1
18	61.5	1.6	682	1 US-09-371-347a-22	Sequence 22, App1
19	61	1.6	18	1 US-09-371-347a-34	Sequence 34, App1
20	61	1.6	18	1 US-09-371-347a-35	Sequence 35, App1
21	58	1.5	18	1 US-09-371-347a-26	Sequence 26, App1

22	58	1.5	18	1	US-09-371-347a-30	Sequence 30, App1
23	57	1.5	18	1	US-09-371-347a-38	Sequence 38, App1
24	55	1.5	18	1	US-09-371-347a-32	Sequence 32, App1
25	54	1.4	18	1	US-09-371-347a-29	Sequence 29, App1
26	53	1.4	18	1	US-09-371-347a-28	Sequence 28, App1
27	51	1.4	9	1	US-09-371-347a-61	Sequence 61, App1
28	51	1.4	18	1	US-09-371-347a-36	Sequence 36, App1
29	51	1.4	18	1	US-09-371-347a-37	Sequence 37, App1
30	50	1.3	689	1	US-09-371-347a-37	Sequence 37, App1
31	49	1.3	18	1	US-09-371-347a-27	Sequence 27, App1
32	49	1.3	677	1	US-09-371-347a-23	Sequence 23, App1
33	49	1.3	697	1	US-09-371-347a-46	Sequence 46, App1
34	49	1.3	698	1	US-09-371-347a-42	Sequence 42, App1
35	49	1.3	698	1	US-09-371-347a-21	Sequence 21, App1
36	49	1.3	698	1	US-09-371-347a-42	Sequence 42, App1
37	49	1.3	698	1	US-09-371-347a-44	Sequence 44, App1
38	42	1.1	18	1	US-09-371-347a-33	Sequence 33, App1
39	40	1.1	18	1	US-09-371-347a-31	Sequence 31, App1
40	34.5	0.9	19	1	US-09-371-347a-55	Sequence 55, App1
41	34	0.9	19	1	US-09-371-347a-39	Sequence 39, App1
42	31	0.8	18	1	US-09-371-347a-40	Sequence 40, App1
43	30	0.8	18	1	US-09-371-347a-36	Sequence 36, App1
44	29	0.8	6	1	US-09-371-347a-59	Sequence 59, App1
45	29	0.8	22	1	US-09-371-347a-58	Sequence 58, App1

#### ALIGNMENTS

RESULT 1  
US-09-371-347a-2  
Sequence 2, Application US/09371347a  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A.  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
FILE REFERENCE: 5004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347a  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 2  
LENGTH: 698  
TYPE: PRT  
ORGANISM: Homo sapiens  
US-09-371-347a-2  
Alignment Scores:  
Pred. No.: 4.26e-66  
Score: 3590.50  
Percent Similarity: 99.71%  
Best Local Similarity: 99.71%  
Query Match: 95.49%  
DB: 1  
Gaps: 1  
us-09-371-347a-47 (1-2093) x US-09-371-347a-2 (1-698)  
QY 1 ATGAGAGGTTTCTGTTACTATATGCTACACAGCAGGACGCAAGGCATCGCAGAA 60  
Db 1 MetArgArgheueuenuTyrrAlaThrChnGlnGlyglnAlaIysAlaIleAlaGlu 20  
QY 61 GAAATGTGTAGCAGAGCTGTGTACATGCATTTTTCGACATCTTCACTGTATTAGGAA 120  
Db 21 GlutecysgluInlaIaValIhsglyPhseserAlaaspneuhtscysIleSerglu 40

QY	121	TCGCATAGTATGACCTTAAAAACGAAACAGTCTCTTGTTGGTGGGTTTACACAG	180
Db	41	SersApLyTyraSpLeuLeuYthrGluThrAlaProLeuValValValValSerThrThr	60
QY	181	GGCACCGGAGACCCGACACAGCCCGCAAGTTGTAAAGAAATACAGAACCAACA	240
Db	61	GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluLeuAlaSerGlnThr	80
QY	241	CTGCCGGTTGATTCTTTGCTGCACCTGGCGGTATGGGTTACTGGGCTTCGGTGATT	300
Db	81	LeuProValaAspPhePheAlaHisLeuArgTyrgLysLeuLeuGlyLeuGlyLysPheGlu	100
QY	301	TACACCTTACTTTGGCAATGGGGGGGAGATTAATTGATTAACGACTTCAAGAGCTTGGAA	360
Db	101	TyrThrTyrrPheCysAsnGlyLysLysLysLysLysLysLysLysLysLysLysLysLys	120
QY	361	CGGCAATTTCTATGACACTGCACATGCACATGCATCTGTAGGTTTAAAGACTTGGTGAG	420
Db	121	ArgHisPheTyrrAspThrGlyHisLysAlaAspAspCysValGlyLeuGluLeuValGlu	140
QY	421	CCGTGATTTGCTGCACTCTGGCCAGCCCTCAAGAAAGCAATTTAGTCAAGACAGACAA	480
Db	141	ProThrIleAlaGlyLeuThrProAlaLeuArgLysHisPheArgSerArgGlyGln	160
QY	481	GAGAGAGTAATATGGCGGCACTCCCGGTGGCACTCCTGCATCTTGAGACACAGCTTGTG	540
Db	161	GlnGluLysSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal	180
QY	541	AAGTCAGAGCTGCTACACATTGAATCTCAAGTCGAGCTTGCAGATTGCATTCAGAGA	600
Db	181	LysSerGluLeuLeuHisLysLeuSerGlnValGluLeuLeuArgPheAspSerGly	200
QY	601	AGAAAGATTCTGAGGTTTGAAGCAAAATGCAGTGAACAGCAACCAATTCATGTTGTA	660
Db	201	ArgLysAspSerGluValLeuLysGluAsnAlaValaAsnSerAsnGlnSerAsnValVal	220
QY	661	ATTGAAGACTTTGAGTCTCTCACTTACCCGTTCCGTAACCCCACTCTCAAGACCTCTTG	720
Db	221	IleGluAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu	240
QY	721	AATATTCCTGGTTTAAACCCCAAGAAATTTACAGGATCATCTGCAGAGATCTCTGGCCAG	780
Db	241	AsnIleProGlyLeuProProGluTyrIleuGlnValHisLeuGlnGlnSerLeuGlyGln	260
QY	781	GAGAAAGCCAAAGTATCTGTGACTTGCAGACATCCAGTTTTCAGAGTCCAAATTTCAAAG	840
Db	261	GluGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProLysSerLys	280
QY	841	GCAGTTCAACTTACTACGATGATGATGCCATAAAAACACTGCTGCTGGATGGAAATGGACATT	900
Db	281	AlaValGlnLeuThrThrAsnAspAlaLysThrThrLeuLeuValGluLeuAspLysLe	300
QY	901	TCAAAATACAGACTTTTCTTATCAGCTGTCGACATGCTTCAAGCATGTGCTTCAACAGT	960
Db	301	SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValLysCysProAsnSer	320
QY	961	GATTCTGAGTACAAAGCTTACTCCAAAGACTGCAGCTTGAAGATTAAGAGAGACACTGC	1020
Db	321	AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlnHisCys	340
QY	1021	GTCTCTTTGAAAATTAAGCGACACAAAGAAAGAGAGCTTACTTACCACAGCATTA	1080
Db	341	ValLeuLeuLysLysLysLysLysLysLysLysLysLysLysLysLysLysLysLysLys	360
QY	1081	CCGCGGGAGATTTCTCTCCAGTTCATTTTTACCTGGTGCTTTGAAATCCGAGCAATTCCT	1140
Db	361	ProAlaGlyCysSerLeuGlnPheIlePheThrTyrrCysLeuGluLysArgAlaIlePro	380
QY	1141	AAAAAGCAATTTTTCGAGACCTTGTGAGCATATACCACTGACAGTGCAGAAAGCGACAG	1200
Db	381	LysLysLysAlaPheLeuArgAlaLeuValAlaSpTyrrThrSerAspSerAlaGluLysArgArg	400
QY	1201	CTTACAGGACGTGTGCAGTAAACAAGGGGACGCGATTATAGCCGCTTTGTATCGAGATGCC	1260

Db	401	LeuGInGluLeuCySerLysGInGlyAlaAlaAspTyrSerArgPheValArgAspAla	420
Qy	1261	TGTGGCTGCTGTTGGATCTCTCTCGCTTTCCCTTTCTTGGCAGCACCACCTGAGTCTC	1320
Db	421	CysAlaCySLeuLeuAspLeuLeuAlaPheProSerCysGInProProLeuSerLeu	440
Qy	1331	CTGCTCCGAACATCTTCTCTTAACCTTCAACCCAGACCAATATTCGTGTGCAGCTCAAGTTTA	1380
Db	441	LeuLeuGInLysLeuProLysLeuGInProArgProTyrSerCysAlaSerSerLeu	460
Qy	1381	TTTCACCCAGGAAAGCTCCATTTTGTCTTCAACATTGNGAATTCGTCTACGCGCACA	1440
Db	461	PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr	480
Qy	1441	ACAGAGCTTCTGCGAAGGAGATGTACAGAGCTGAGCTGGCTTTGGTGGCTTCAGTT	1500
Db	481	ThrGluValLeuArgLysGlyValCysThrGlyTyrThrLeuAlaLeuValAlaSerVal	500
Qy	1501	CTTCAGCCAAACATATCATGCATCCCATGAGACACGGCGGAAAGCCCTGGCTCTTAAGATA	1560
Db	501	LeuGInProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle	520
Qy	1561	TCCATCTCTCTCGAACAACAATCTTCTTCCACTTACAGATGACCCCTCAATCCCATC	1620
Db	521	SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle	540
Qy	1621	ATAATGTGTGGTCCAGGAACCGGACATGACCCCGTTTATTTGGGTCTTCAACAATAG---	1676
Db	541	IleMetValGlyProGlyThrGlyIleAlaAlaProHeIleGlyPheLeuGInHisArgGlu	560
Qy	1677	AACTCCAGAACACACACCATGAGAAATTTTGGAGCAATGTGTGTTGTTTGGCTGC	1736
Db	561	LysLeuGInGInGInHisProAspGlyAsnPheGlyAlaMetThrLeuPhePheGlyCys	580
Qy	1737	AGGCAATAAGATAGGAGTTATCTATTCAGAAAGAGTCAGACATTCCTTAAGCATGGG	1796
Db	581	ArgHisLysAspArgAspTyrLeuPheArgLysGluLeuArgHisPheLeuLysHisGly	600
Qy	1797	ATCTTAACTCATCTCAAGAGTTTCCCTTCTCAAGAGATCTCTGTTGGGAGAGGAAGCC	1856
Db	601	IleLeuThrHisLeuLysValValSerPheSerArgAspAlaProValGlyGluGluAla	620
Qy	1857	CCAGCAAAAGTATGTACAAACACATCCACGTTTCATGCGCAGCAGGTGGGAGAGATCTCTC	1916
Db	621	ProLysLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgGlyLeu	640
Qy	1917	CTCCAGAGAAACGGCCCATTTATGTGTGTGGAGATGCCAAAGAAATATGGCCAGAGATGTA	1976
Db	641	LeuGInGluAsnGlnHisIleTyrValCysGluLysAspAlaLysAsnMetAlaLysPheVal	660
Qy	1977	CATGATGCGCTTGTGCAAATATATAGCAAAAGAGGTTGAGATTGAAAACTAGAAAGCATG	2036
Db	661	HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGluAlaMet	680
Qy	2037	AAAAACCTGTGGCATTTAAAGAAAGAAACGCTACTTCAGAGATATTGGTCA	2090
Db	681	LysThrLeuAlaThrLeuLysGlnGluLysArgTyrLeuGlnAspIleTyrSer	698
RESULT 2			
US-09-371-347A-21			
; Sequence 21, Application US/09371347A			
; GENERAL INFORMATION:			
; APPLICANT: Grozen, Roy A.			
; APPLICANT: Rozen, Rima			
; APPLICANT: Leclerc, Daniel			
; APPLICANT: Wilson, Aaron			
; APPLICANT: Rosenblatt, David			
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:			
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE			
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER			
; FILE REFERENCE: 50004/003003			
; CURRENT APPLICATION NUMBER: US/09/371,347A			





QY	1857	CCAGCAAGGTATNGTCAAGACAACTCCAGCTTATGGCCGACGAGTGCCAGATCCTC	1912
Db	621	PROALATSYTVAIGHASPSMNLGEMNEUHSIGLYINGINVAIALARGITLLEU	640
QY	1917	CTCCAGGAAACGCGCCATATTATGTGTGTGGAGATGCAGAAATATATGCCAAGATGTA	1976
Db	641	LEUGINGIUAENGIYHSITLLETYTALCYSGIYASPRALATYSAEMELALILYASPYA	660
QY	1977	CATGATGCCCTTGTGCAATATATTAAGCAAAAGGTTGGAGTTGAAAACTGAAGCAATG	2036
Db	661	HISAPRALALEUVALGIMLLETLESERYSGIYVALGIVALSLEUGIUALAMET	680
QY	2037	AAACCCCTGGCCACTTTAAAGAGAAAAACGCTACCTTCAGGATATTGTGTCA	2090
Db	681	LYSTHRLLEUALATHLEULYSGIUNILYASGYRLDEUGINAPLLETTPSER	698
RESULT 3			
US-09-371-347A-42			
; Sequence 42, Application US/09371347A			
; GENERAL INFORMATION:			
; APPLICANT: Gravel, Roy A,			
; APPLICANT: Rozen, Rima			
; APPLICANT: Leclerc, Daniel			
; APPLICANT: Wilson, Aaron			
; APPLICANT: Rosenblatt, David			
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:			
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBER			
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER			
; FILE REFERENCE: 50004/003003			
; CURRENT APPLICATION NUMBER: US/09/371,347A			
; CURRENT FILING DATE: 1999-08-10			
; PRIOR APPLICATION NUMBER: 09/232,028			
; PRIOR FILING DATE: 1999-01-15			
; PRIOR APPLICATION NUMBER: 60/071,622			
; PRIOR FILING DATE: 1998-01-16			
; NUMBER OF SEQ ID NOS: 61			
; SOFTWARE: FASTSEQ for Windows Version 4.0			
; SEQ ID NO 42			
; LENGTH: 698			
; TYPE: PRT			
; ORGANISM: Homo sapiens			
US-09-371-347A-42			
Alignment Scores:			
Pred. No.: 5,066-66 Length: 698			
Score: 3586,50 Matches: 695			
Percent Similarity: 59,71% Conservative: 1			
Best Local Similarity: 99,57% Mismatches: 1			
Query Match: 95,39% Indels: 2			
DB: 1 Gaps: 1			
US-09-371-347A-47 (1-2093) x US-09-371-347A-42 (1-698)			
QY	1	ATGAGGAGGTTTCTGTGTAATATCTACACAGACAGGACAGGAAAGCCATGCGAGAA	60
Db	1	MeATArGArPLeuLeuLeuLYrAlaThrGInGInGInGInAlaIAlaIAGlu	20
QY	61	GAATNGTGTGAGCAAGCTGTGGTACATGATTTCTGAGATCTTCACTGTATTAAGTAA	120
Db	21	GIULIECYSGIUNGInAlaValaValaHsIGIYPheSerAlaAPrLeuHsICysIleSerGlu	40
QY	121	TCCGATAGTATGACCTATAAAACGAAACAGCTCCTCTGTGTGTGTGGTTTCAACAG	180
Db	41	SeArAPrSYrYrArPrLeuLYThrGluThrAlaProLeuValValaValaSetThrThr	60
QY	181	GGCACCGGAGACCCACCCGACACAGCCCGCAAGTTTGTAAGAAATACAGACCAACA	240
Db	61	GIYThrGIYArPrProArPrThrAlaArgLYSPheValLYSGIuIIGInASnGIInThr	80
QY	241	CTGCCGGTGAATTTCTTGTCTCACCTGGCGGTATGGGTAACTGGGGTCCGGTGAATTCAG	300
Db	81	LeuProValArPrPhePheAlaHsIleuArGTYrGlyLeuLeuGlyLeuGlyArSPSerGlu	100

QY	301	TAAACCTTCTTTTGGAAAGGGGGGAGAAAGTAATTGATAAACAAGCTTCAAGAGCTTGGAGACC	360
Db	101	TyrThrTyrPheCysAsnGlyGlyLysLLeIleAspLysArgLeuGlnGluLeuGlyAla	120
QY	361	CGGCAATTTCTTATGACACTGGACATGATGCAGATGACTGTAGAGTTTAAAGACTTGTGGTTGAG	420
Db	121	ArgHisPheTyrAspThrGlyHisIleAlaAspAspCysValGlyLeuGluLeuValGlu	140
QY	421	CCGTCGATTTGCTGGACTTGGCCAGCCCTCGAAGAAAGCAATTTTAGTCAAGCAGAGACAA	480
Db	141	ProTrpIleAlaGlyLeuTrpProIleAsnArgLysHisPheArgSerSerArgGlyGln	160
QY	481	GAGGAGATAAGTGGCGACACTCCGGATGGCAATCACCTGATCTTTGAGAGACAGACTTGTG	540
Db	161	GluGluIleSerGlyAlaLeuProValAlaSerProIleAsnLeuArgThrAspLeuVal	180
QY	541	AAGTCAGAGCTGCTACACATGGAATCTCAAGTCGAGCTTCTGAGATTGATGATTCAAGA	600
Db	181	LysSerGluLeuLeuHisIleGluSerGlnValGluLeuLeuArgPheAspAspSerGly	200
QY	601	AGAAAGCAATTCGAGGTTTGAAGCAAAATGCAGGAACACCAACCAATTCGAATGTTGTA	660
Db	201	ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValAla	220
QY	661	ATTGAAGACTTTGAGTCCCTCACTTACCCGTCGGTACCCCGCACTCTCAAGACCTCTCTG	720
Db	221	IleGluAspPheGluSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu	240
QY	721	AATATCTCTGGTTTACCCCCAGAAATATTATTACAGATACATTCGACAGAGATCTCTTGGCCAG	780
Db	241	AsnIleProGlyLeuProProGluTyrLeuGlnValHisLeuGlnGlnSerLeuGlyGln	260
QY	781	GAGCAAGCCCAAGTACTGTGACTTCAGACATCCAGTTTTCAGAGTCCCAATTTCAAG	840
Db	261	GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys	280
QY	841	CGAGTTCAACTTACTAGCATGATGATGCCATAAAAACACTCTGCTGGTGAATTGGACATT	900
Db	281	AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle	300
QY	901	TCAAAATCAGACTTTTCCCTATCAGCTGAGGAATGCTTCAACGATGTGCTCCCTTAAACGT	960
Db	301	SerSerThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer	320
QY	961	GATTCTGAGTACAAGCCTTACTCCAAAGACTGACGCTTGAAAGATAAAGAGACACTGC	1020
Db	321	AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGluAspLysArgGluHisCys	340
QY	1021	GTCCTTTTGAATAATAAGCAGACACAAAGAAAGAGAGCTTACTTACCAGAGATATA	1080
Db	341	ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle	360
QY	1081	CTTCGGGAGTCTTCTCTCCAGTTTATTTTTCACCTGATGCTTGAATTCGAGCAATTCT	1140
Db	361	ProIleGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGluIleArgAlaIlePro	380
QY	1141	AAAAAGCATTTTTCGAGCCCTTGTGGACTATACCAAGTCAAGTCTGTAAGACGCAGG	1200
Db	381	LysLysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGluLysArgArg	400
QY	1201	CTACACGAGCGCTGCGAATAAACAAGGGGAGCCGATTAATACCGCTTTGTACGAGATGCC	1260
Db	401	LeuGlnGluLeuCysSerLysGlnGlyAlaAlaAspLysSerArgPheValArgAspAla	420
QY	1261	TGTGCTGCTGTGTGGAATCTCTCTCGCTTTCCTCTTTCGCAAGCAACATCAGTCTC	1320
Db	421	CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu	440
QY	1321	CTGCTCCGAACATCTTCTTAACCTTCAACCCAGACCATATTGTGTGCAAGCTCAAGTTTA	1380
Db	441	LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerSerLeu	460

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QY 1381 TTTCACCCAGAAAGATTCATTTTGTCTTCAACATTTGGAATTTCTGTCTACATGCCACA 1440
    |||
Db 461 PheHisProGlyIysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
QY 1441 ACAGAGCTTCTGCCGAGGAGGATATGTACAGGCTGCGCTGTGCTGTGCTTCAAGTT 1500
    |||
Db 481 ThrGluValLeuArgIysGlyValCysThrGlyTyrPheValLeuLeuValAlaSerVal 500
QY 1501 CTTTCAGCCAAACATACATGCATCCCATGGAAGACAGCGGGAAGCCCTGCGCTTCAAGATA 1560
    |||
Db 501 LeuGluProAsnIleHisAlaSerHisGluAspSerIlyValAlaLeuAlaProIyValIle 520
QY 1561 TCCATCTCTCTCGAACAACAATTTCTTCCATCTTACAGATGACCCCTCAATCCCATC 1620
    |||
Db 521 SerIleSerProAsnThrThrAsnSerPheHisLeuProAspPheProSerIleProIle 540
QY 1621 ATATATGTGGGTCCAGGACCGGATAGCCCGTTTATTTGGGTTCTTCAACATAG---- 1676
    |||
Db 541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
QY 1677 AAATCCCAAGAACACACCCAGATGGAATTTTGGACCAATGTGGTGTGTTTTGGCTGC 1736
    |||
Db 561 LysLeuGlnGluGlnHisProAspGlyAsnPheGlyValMetTyrPhePhePheGlyCys 580
QY 1737 AGGCATTAAGGATAGGATTAATCTATTCAGAAAGAGCTCAGACATTTCTTAAAGCATGGG 1796
    |||
Db 581 ArgHisLysAspArgAspArgLysLeuPheArgLysGluLeuArgHisPheLeuLysHisGly 600
QY 1797 ATCTTAATCATCTTAAAGGATTTCTTCTCAAGAGATGCTCTGTGTGGGAGAGAGAGCC 1856
    |||
Db 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGluAla 620
QY 1857 CCAGCAAGATATGTACAGACACATCCAGCTTATATGCGCAGCGGTGGGAGAAATCTTC 1916
    |||
Db 621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
QY 1917 CTCAGAGAGAACGGCCATTTATATGTGTGTGAGAGATCAAGATATATGGCCAGATGTA 1976
    |||
Db 641 LeuGlnIleuAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
QY 1977 CATGATCCCTTGTGCAATATATATAGCAAGAGGTTGAGTTGAAAAATAGAGACATG 2036
    |||
Db 661 HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGluAlaMet 680
QY 2037 AAAACCTGGCCACTTTAAAGAAAGAAAAGCTTACCTTCAGATATTTGGTCA 2090
    |||
Db 681 LysThrLeuAlaThrLeuLysGluGluLysArgTyrLeuGlnAspIleTyrSer 698

RESULT 4
US-09-371-347A-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
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US-09-371-347A-44
Alignment Scores:
Pred. No.: 6 55e-66 Length: 698
Score: 3580.50 Matches: 695
Percent Similarity: 99.57% Conservative: 0
Best Local Similarity: 99.57% Mismatches: 2
Query Match: 95.23% Indels: 2
DB: 1 Gaps: 1

us-09-371-347A-47 (1-2093) x US-09-371-347A-44 (1-698)
QY 1 ATGAGAGAGTTTCTGTACTATATATGCTACACAGCAGGACAGCAAGCCATCGAGAA 60
    |||
Db 1 MetArgArgPheLeuLeuLeuTyrAlaThrGlnGlnGlyGlnAlaLysAlaIleAlaGlu 20
QY 61 GAAATGTGAGCAAGCTGTGTACATGCATTTTCTGCAGATCTTCACTGATTAAGTGA 120
    |||
Db 21 GluMetCysGluGlnAlaValAlaValHisGlyPheSerAlaAspLeuHisThrIleSerGlu 40
QY 121 TCCGATTAAGATAGCCTTAAACCGAAGACGCTCTGTGTGTGCTTGTGCTTACACAG 180
    |||
Db 41 SerAspLysTyrAspLeuLysThrGluThrAlaProLeuValValValAlaIleSerThr 60
QY 181 GGCACCGAGACCCACCCGACACAGCCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240
    |||
Db 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluIleGlnAsnGlnThr 80
QY 241 CTCGCGGTGATTTCTTGTCTCACTGCGGATAGGTTACTGGGTCTCGGTGATTCAGAA 300
    |||
Db 81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
QY 301 TAAACCTACTTTTGCATGCGGGGAGAGATTAATGATTAAGACTTCAAGAGCTTGGAGCC 360
    |||
Db 101 TyrThrTyrPheCysAsnGlyGlyLysIleLeuAspLysArgLeuGlnGluValAla 120
QY 361 CGCATTTCTATGACACTGACATGACATGATGATCTGTGTAGTTTGAATCTTGTGTAG 420
    |||
Db 121 ArgHisPheTyrAspThrArgHisAlaAspAspCysValGlyLeuGluLeuValGlu 140
QY 421 CCGTGATTTCTGACTCTGCGCAGCCCTCAGAAAGCATTTTATAGTACAGACAGACAA 480
    |||
Db 141 ProTyrIleAlaGlyLeuTyrProAlaLeuArgLysHisPheArgSerSerArgGlyGln 160
QY 481 GAGAGATTAAGTGGCCGACCTCCGCTGCGCATCACTGACCTTGAAGAGACAGCTTGTG 540
    |||
Db 161 GluGlnIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGTCACATTTGAATCTCAAGTGCAGCTTCTGAGATTCATGATTCAGCA 600
    |||
Db 181 LysSerGluLeuLeuHisIleGlnSerGlnValGluLeuLeuArgPheAspAspSerGly 200
QY 601 AGAAGGATTTCTGAGTTTGAAGCAAAATGACAGTGAACAGCAACCAATCAATGTTTGA 660
    |||
Db 201 ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
QY 661 ATTGAAGACTTTGAGTCTTCACTTACCCGTTCCGATCCCACTTCTACAGAGCTCTCTG 720
    |||
Db- 221 IleGluLysPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 ATATTCCTGTGTTTACCCCGAATATTTACAGATACATGACAGAGTCTTGGGCGAG 780
    |||
Db 241 AsnIleProGlyLeuProProGlyLysTyrLeuGlnValHisLeuGlnGlnSerLeuGlyGln 260
QY 781 GAGAAAGCCAAAGTATCTGTGACTTCAGCAGATCCAGTTTTCAGTGCCAAATTTCAAG 840
    |||
Db 261 GluGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
QY 841 GCAGTTTAATCTTACAGATGATGCAATAAACCACTTCTGTGTGAGTAATGAGACAT 900
    |||
Db 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
QY 901 TCAATAGACAGCTTTCTATCAGCTGAGAGATGCTTACGCTGATCTGCCCTAACAGT 960
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Db      |||
301 SeranThirAspSerIyGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      |||
961 GATTCGAGGATCAAAAGCTCAACAGACTGAGCTTGAGATTAAGAAGAGACACTGC 1020
Db      |||
321 AspSerGlnValGlnSerLeuGlnArgLeuGlnLeuGlnAspGlyAspGlnIleCys 340
Qy      |||
1021 GTCCTTTGAAAATAAAGGACAGACAAAGAAAGAGAGCTTACCTTACCCACATATA 1080
Db      |||
341 ValLeuLeuLysIleLysAlaAspThrIleLysGlyAlaThrLeuProGlnIleSile 360
Qy      |||
1081 CTTGCGGAGATGTTCTTCCAGTTTATTAACCTGGTGTCTTGAATCCGAGCAATTTCCT 1140
Db      |||
361 ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
Qy      |||
1141 AAAAGGACATTTTGGACGACCTTGAGACTATACAGTGACAGTGCTGAAAGCGAGG 1200
Db      |||
381 LysLysAlaPheLeuAlaGlnAlaValAspTrpThrSerAspSerAlaGlnLysArgArg 400
Qy      |||
1201 CTACAGAGAGCTGTGACATTAACAAGGGGACGCCGATTAATAGCCCTTTGTACGAGATGCC 1260
Db      |||
401 LeuGlnIleuLysSerIyGlnGlnLysAlaAlaAspTrpSerArgPheValArgAspAla 420
Qy      |||
1261 TGTGCTGCTTGTGGATCTCTCTCTGCTTCCCTTCTTGCCAGCCACACTGAGTCTC 1320
Db      |||
421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Qy      |||
1321 CTGCTGACATCTCTTAAACTCAACCCGACGACCATTAATTCGTGTGAGTCAAGTTTA 1380
Db      |||
441 LeuLeuGlnIleuLysLeuGlnIleuProArgProTrpSerCysAlaSerSerLeu 460
Qy      |||
1381 TTTCACCCAGAGAAAGTCCATTTTGTCTTCAACATGTGAAATTTCTGTACTGCCACA 1440
Db      |||
461 PheHisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
Qy      |||
1441 ACAGAGGTTCTGCGGAAAGGAGTATGTACAGGCTGGGCTTGTGTTGCTTCAGTT 1500
Db      |||
481 ThrGlnValLeuArgLysGlnValCysThrGlyTrpLeuAlaLeuLeuValAlaSerVal 500
Qy      |||
1501 CTTGAGCCAAACATACATGTGATCCCATGAAAGACGCGGAAAGCCCTGGCTCTTAAGATA 1560
Db      |||
501 LeuGlnIleProsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIle 520
Qy      |||
1561 TCACATCTCTCTCGAACAAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Db      |||
521 SerIleSerProArgThrTrpAsnSerPheHisLeuProAspAspProSerIleProIle 540
Qy      |||
1621 ATATATGGTGGGTCCAGAACCCGAGATAGCCCGCTTATTTGGGTTCTTACAACTAG--- 1676
Db      |||
541 IleLeuValGlnProGlyTrpGlnIleAlaProPheIleGlyPheLeuGlnHisArgGln 560
Qy      |||
1677 AAATCCAAAGAACAAACCCAGATGAAATTTTGGACCAATGTGGTGTGTTTGGCTGC 1736
Db      |||
561 LysLeuGlnGlnGlnIleHisProAspGlyAsnPheGlyAlaMetTrpLeuPhePheGlyCys 580
Qy      |||
1737 AGGATTAAGATAGGATTAATCTATTGCAAAAAGAGCTGACAACTTCTTAAAGCATGG 1796
Db      |||
581 ArgHisLysAspArgAspTrpLeuPheArgLysLeuLysIleuLysPheLeuLysHisGly 600
Qy      |||
1797 ATCTTAACCTATCTAAAGGTTTCTTCTCAAGAGATGCTCTGTGGGGAGAGAAAGCC 1856
Db      |||
601 IleLeuThrHisLeuLysValIleSerPheSerArgAspAlaProValGlyGlnGlnGlnAla 620
Qy      |||
1857 CCAGCAAGATATGTAACAAGCAACATCCAGCTTCAATGCGCAGAGCGAGGAGAAATCTC 1916
Db      |||
621 ProAlaLysTrpValGlnAspAsnIleGlnLeuHisSerLysGlnGlnValAlaArgIleLeu 640
Qy      |||
1917 CTCGAGAGAAAGCGCCATATTATATGTGTGTGAGATCAAAAGATATATGCGCAAGATGA 1976
Db      |||
641 LeuGlnIleuAsnGlnHisIleTrpValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Qy      |||
1977 CATGATGCTCTGTGCAATTAATTAAGCAAAAGAGGTGAGTTGAAAACTGAAGCAATG 2036

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Db      |||
661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyValGlnLysLeuGlnAlaMet 680
Qy      |||
2037 AAAACCTGGCCACTTAAAGAAAGAAAGAGGCTTACCTGAGATATTGTCATCA 2090
Db      |||
681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLysIleuGlnAspIleTrpSer 698

RESULT 5
US-09-371-347A-46
: Sequence 46, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A.
: APPLICANT: Kozem, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 46
: LENGTH: 697
: TYPE: PRT
: ORGANISM: Homo sapiens
: US-09-371-347A-46

Alignment Scores:
Pred. No.: 7 966-66 Length: 697
Score: 3576.00 Matches: 695
Percent Similarity: 99.57% Conservative: 0
Best Local Similarity: 99.57% Mismatches: 1
Query Match: 95.11% Indels: 3
DB: 1 Gaps: 2

us-09-371-347A-47 (1-2093) x US-09-371-347A-46 (1-697)
Qy      |||
1 ATGAGAGGTTTCTGTACTATATGCTACACAGACGAGCAAGCAAGCCATCGAGAA 60
Db      |||
1 MetArgArgPheLeuLeuLeuLysAlaThrGlnGlnGlnLysAlaIleAlaGln 20
Qy      |||
61 GAATGTGTAGCAAGCTGTGTACATGATTTTTCGACATCTTCACTGATTAAGTGA 120
Db      |||
21 GlnMetCysGlnGlnIleAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGln 40
Qy      |||
121 TCCGATTAAGTATACCTTAAACCCGAAACAGCTCTTGTGTTGTTGTTTCAACAG 180
Db      |||
41 SerAspLysTrpAspLeuLysTrpGlnThrAlaProLeuValAlaValAlaSerThrThr 60
Qy      |||
181 GGCACCGGAGACCCACCCGACACAGCCCGCAAGTTTGTTAAGGAAATACAGAAC 240
Db      |||
61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
Qy      |||
241 CTGCGGTTGATTTCTTGTCTCACTGCGGTATGGGTACTGGGCTCGGTGATTCAAA 300
Db      |||
81 LeuProValAspPhePheAlaHisLeuArgTrpGlyLeuLeuLysLeuGlnLysAspSerGln 100
Qy      |||
301 TACACCTACTTTTGAATGGGGGAAAGATATGATTAACGACTTCAAGAGCTTGAGCC 360
Db      |||
101 TrpThrTrpPheCysAsnGlnGlyLysIleIleAspLysArgLeuGlnGlnLysAla 120
Qy      |||
361 CGCATTTCTATGACACTGACATGACATGACATGACTGTGTAGTGTAGAACTTGTGTTGAG 420
Db      |||
121 ArgHisPheTrpAspThrArgHisAlaIleAspAspCysValGlyLeuGlnLeuValGln 140
Qy      |||
421 CGGTGATTTGCTGGACTGTGGCCAGCTTCAAGAAAGATTTTGGTCAAGACAGACAA 480

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Db      141  ProtripleaaglyleutrpProalaLeuarglyshisPheargSerArgGlyGln 160
Qy      481  GAGAGTAAGTGGCGGACTCCGGTGGCACTCGTGCCTTGAGGACGAGCTTGTC 540
Db      161  GlnGlnleuSerGlyalaLeuProvalAlaSerProalaSerleuArgThnAspLeuVal 180
Qy      541  AAGTCAGAGCTGTACACATTCATTCAGTCAGCTTCGTGAGATTGATGATTCAGA 600
Db      181  LysSerGluLeuLeuHisileGluSerGlnValGluLeuLeuArgPheAspSerGly 200
Qy      601  AGAAGAATTCGAGGTTTGAAGCAAAATGCAAGTGAACAGCAACCAATCCATGTTGTA 660
Db      201  ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220
Qy      661  ATTGAACATTTGAGTCTCCTACCTTACCGCTGGTACCCGACCTTCACAGCCTCTCG 720
Db      221  IleGlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerleu 240
Qy      721  AATATTCCTGGTTACCCCGAGAAATATTACAGGTACATTCGACAGAGTCTTGCGCCAG 780
Db      241  AsnIleProGlyLeuProProGlnIleuGlnValHisleuGlnIleuSerleuGln 260
Qy      781  GAGGAAAGCCAAATGATCTGTGACTTCAGCAGATCCAGTTTCAAGTCCCAATTTCAAAG 840
Db      261  GlnGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Qy      841  GCACTTCACTTACTACGAAATGATGACCTTAAACCACTCGTGTGATGATTTGACACTT 900
Db      281  AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
Qy      901  TCAATATCAGACTTTTCCATCAGCTGAGAGTGCCTTCAGCGTATGCTGCTTAAACAGT 960
Db      301  SerAsnThrAspPheSerLysGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      961  GATTCTGAGTACAAAGCCTTCTCCAAAGACTGCAAGCTTGAAGTAAAGAGACACTGC 1020
Db      321  AspSerGlnValGlnSerLeuGlnArgGlnLeuGlnAspLysArgGlnHisCys 340
Qy      1021  GTCTTTTGAATAATTAAGGACGACACAAAGAAAGAGAGTACCTTACCCGACATTTA 1080
Db      341  ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy      1081  CCTGCGGAGATGTTCTCTCCAGTCACTTTTACCTGTGTCTTGAATCCGAGCAATTCCT 1140
Db      361  ProIleGlyCysSerLeuGlnPheIlePheThrIleCysLeuGlnIleArgAlaIlePro 380
Qy      1141  AAAAAGCATTTTTCGAGCCCTTGTGTGACTATACCACTGACAGTGAAGCGCAGG 1200
Db      381  LysIleAlaPheLeuArgAlaLeuValAspLysThrSerAspSerAlaGlnLysArgArg 400
Qy      1201  CTACAGAGACTGTGTGCAATTAACAAAGGCGCAGCCGATTTTACCGCTTTGTACGATGCC 1260
Db      401  LeuGlnGlnLeuLysSerLysGlnGlyAlaAlaAspLysThrSerAspPheValArgAspAla 420
Qy      1261  TGTGCTGCTGTTGGATCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCT 1320
Db      421  CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerleu 440
Qy      1321  CTGCTCGAACAATCTTCTTAACTTCACCAAGCCAGACCATATTCGTGTGCAAGCTCAAGTTTA 1380
Db      441  LeuLeuGlnHisleuProLysLeuGlnProArgProLysCysAlaSerSerSerleu 460
Qy      1381  TTTCAACCCAGGAAAGCTTCATTTTGTCTTCAACATTTGGAATTTTGTCTTACTGCCACA 1440
Db      461  PheHisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
Qy      1441  ACAGAGGTTTGGCGGAAAGGAGTATGTACAGGCTGGCTGGCTTGTGCTTCACTTCACTT 1500
Db      481  ThrGlnValLeuArgLysGlyValCysThrGlyThrPheValAlaLeuLeuValAlaSerVal 500
Qy      1501  CTTGAGCCAAACATATCATGATCCCATGAAAGCAGCGGAAAGCCCTGGCTCTTAAGATA 1560
Db      501  LeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIle 520

```

```

Qy      1561  TCCATCTCTCTCGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Db      521  SerIleSerProArgThrThrAsnSerPheHisleuProAspAspProSerIleProIle 540
Qy      1621  ATAATGCTGAGTCCAGGACCGGCAATGCCCTTTATTTGGGTTCTTCAACATAG---- 1676
Db      541  IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGln 560
Qy      1677  AAATCCAAAGAACACGCCAGATGGAATTTTGGACCAATGTCGTTGTTTGGCTGC 1736
Db      561  LysLeuGlnGlnGlnHisPProAspGlyAsnPheGlyAlaMetCtp---PhePheGlyCys 579
Qy      1737  AGGCATAGAGATAGGAGATTAATCTATTACAGAAAGAGCTCAGACATTTCTTAACATGGG 1796
Db      580  ArgHisLysAspArgAspArgLysLeuPheArgLysGlnLeuArgHisPheLeuLysHisGly 599
Qy      1797  ATCTTAACATCTTAAGAGTTTCTCTTCTTCAAGAGATCCTCTGTTGGGAGAGAGAACCC 1856
Db      600  IleuThrHisleuLysValSerPheSerArgAspAlaProValGlyGlnGlnLysAla 619
Qy      1857  CCAGCAAGATATGTACAGAACACATCCAGCTTCATGCGCAGCGGAGGAGAAATCCTC 1916
Db      620  ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 639
Qy      1917  CTCACGAGAAAGCGCCATATTTATGTGTGTGAGATGCAAAAGATATGCGCAAGATGTA 1976
Db      640  LeuGlnGlnLysGlnHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 659
Qy      1977  CATGATGCCCTTGTGCAATTAATTAAGCAAAAGAGGTTGAGTTGAAAACTGAAGCAATG 2036
Db      660  HisAspAlaLeuValGlnIleIleSerLysGlnValGlyAlaGlyLysLeuGlnAlaMet 679
Qy      2037  AAAACCTGCGCCACTTTTAAAGAAAGAAAGCGTACCTTACAGATATTGCTCA 2090
Db      680  LysThrLeuAlaThrLeuLysGlnLysArgTyrLeuGlnAspIleTyrSer 697

RESULT 6
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PR1
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 1,74e-64 Length: 689
Score: 3504.50 Matches: 687
Percent Similarity: 98.85% Conservative: 1
Best Local Similarity: 98.71% Mismatches: 1
Query Match: 93.20% Indels: 7
DB: 1 Gaps: 5
us-09-371-347a-47 (1-2093) x US-09-371-347A-48 (1-689)

```











```

QY 1099 CAGTTCATTTTACCTGGTGGCTTGAATCCGAGCAATTCCTAAAGAGCATTTTGGGA 1158
Db 368 ArgThralaLeuThrTyrLeuLeuSerIleThrAsnProPheGlnThrAsnValLeuTyr 387
QY 1159 GCCCTTGGACATAATACGATGACAGCTGTGAAAAGCCGAGGCTACAGAGCTGTGCAGT 1218
Db 388 GluLeuIaGlnTyrAlaSerGlnProSerGlnGlnIuLeuLeuArgIlyMetAlaSer 407
QY 1219 AAACAGGGGACGCCGAT-----TATAGCCGCTTTGTAACAGATGCTGTGCCTGGCTTG 1272
Db 408 SerSerGlyGlnGlyIlyLeuLeuTyrLeuSerTyrValIaGlnAlaArgIaGlnIle 427
QY 1273 TTGATGCTCCCTCCCTGGCTTCCCTTCGCGACACACATCAAGCTGTGCTGTGCAGCAT 1332
Db 428 LeuAlaIleLeuGlnAspCysPheSerLeuAsnGlyProIlePheIleuCysGlnIuLeu 447
QY 1333 CTTCCTAACTTCAACCCGACCAATATTCGTTGTGCAAGCTCAAGTTTATTTACCCAGGA 1392
Db 448 LeuProArgLeuGlnAlaArgTyrTyrSerIleAlaSerSerSerIlyValIaIleProAsn 467
QY 1393 AAGCTCCATTTTGTCTTCAACATGTGTGAATTTCTGTCTACTGCCACACAAGAGTTGTG 1453
Db 468 SerValIaIleCysValaValaValaIuTyrGlnThrIlyAsnIaGlyArg-----Ile 485
QY 1453 CGAAGAGGAGTATGATGACAGCTGTGCGCTGTGTTGTTGCTTCACTTCCACAGCAAAAC 1512
Db 486 AsnIlySerGlyValaIaThrAsnThrLeu-----ArgAlaIlyGlnIuPro--- 499
QY 1513 ATACATGCATCCCATGAAGACAGCGGGAAGCCGTGCTCTTAAGATATTCATCTTCCT 1572
Db 500 -----ValGlyGlnAsnGlyIyArgIaIleuValPrometPheVal----- 513
QY 1573 CGAACACAAATTCCTTCCACTTACCAATGACCCCTCAATCCCATCATATAATGGTGGT 1632
Db 514 ---ArgIlySerGlnPheArgLeuProPheIlyValaIaThrProValIleMetValGly 532
QY 1633 CCAGGAACCGGACATGACCCCGCTTATTTGGTTCCTACAAACATGAATCCCAAGAACAC 1692
Db 533 ProGlyThrGlyValaIaIaProPheIleGlyPheIleGlnGlnIuArgAlaIaTyrLeuArgGln 552
QY 1693 ACCGAGATGAAATTTTGAGCAATGTGTTGTTTGTGGCTGACAGGATGAAGATAGGG 1752
Db 553 GlnGlyIySerGlnVala---GlyGlnThrLeuLeuTyrTyrGlyCysArgIySerAspGln 572
QY 1753 ATATATCTATTCAGAAAAGAGCTCAGACATTCCTTAACCATGGAGTCTTAATCTATCTAA 1812
Db 572 spTyrLeuTyrArgGlnIuLeuAlaGlnPheAsnArgAspGlyAlaLeuThrGlnIleu 592
QY 1813 AGGTTTCTCTTCAAGAGATGCTCTGTGGGAGGAGGAAGCCGACCAAGTATGTAC 1872
Db 592 snValaIaPheSerArg-----GlnGlnSerIleIyValIaTyrValG 606
QY 1873 AAGACAATCCAGCTTCATGAGCCAGCAGAGTGGCAGAGATCTCTCCAGAGAAAGGCC 1932
Db 606 IlnIleIleuLeuIyGlnIaAspArgIlnIleTyrIlyLeu-----LeuIleGlnIyGlnAla 625
QY 1933 ATATTTATGTTGTGGAGATGCAAAAGATATTTGGCCCAAGAGTGAATCATATGCTTGGC 1992
Db 625 IAsIleTyrValaCysGlyAspAlaAspAsnMetAlaArgAspArgIlnAsnThrPheTyr 645
QY 1993 AAATTAATAGCAAAAGAGGTGGATGTGAAAAATCTGAAGCAGATGAAAAACCTGGCACTT 2055
Db 645 spIleValaIaGlnIuLeuGlnIyAlaMetGlnIlnIaGlnAlaValaAspTyrIleIyIyS 665
QY 2053 TAAAGAAAGAAAACGTAACCTTCACAGATATTGGTCA 2090
Db 665 eumetThrIySerGlyArgTyrSerLeuAspValaTyrSer 677

```

```

: APPLICANT: Gravel, Roy A.
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 60
: LENGTH: 41
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-60

Alignment Scores:
Pred. No.: 0.0552 Length: 41
Score: 215.00 Matches: 41
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 5.72% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-60 (1-41)

Qy 1854 GCCCCAGCAAGTAGTGTACAGACACATCCAGCTTCATGGCCAGAGTGGCCAGAAATC 1913
Db 1 AAlaProAlaYsTyValGlnAspAsnIleGlnMetHisGlnGlnValAlaIaArgIle 20

Qy 1914 CTCTCCAGAGAAAGCGCCATATTATTGTGTGTGAGATGCAAGAAATATGGCCAAAGAT 1973
Db 21 LeuLeuGlnGlnuAsnGlnYHisIleTyValCysGlnYAspAlaYsAsnMetValaYsAsp 40

Qy 1974 GTA 1976
Db 41 Val 41

RESULT 10
US-09-371-347A-54
: Sequence 54, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A.
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 54
: LENGTH: 29
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-54

Alignment Scores:

```

Pred. No.:	0.87	Length:	29
Score:	158.00	Matches:	29
Percent Similarity:	100.00%	Conservative:	0
Best Local Similarity:	100.00%	Mismatches:	0
Query Match:	4.20%	Indels:	0
DB:	1	Gaps:	0

US-09-371-347a-47 (1-2093) x US-09-371-347A-54 (1-29)

DY 259 GCTACCTGGCGTATGGGTACTGGGTCGCCGATTAGAAATACACTACTTTTGCAAT 318  
| | | | |  
Db 1 AlanisLeuarTyrcjylLeuleuglYleugiYaspsergIutyrThrTyrcPacysasn 20

QY		319 GGGGGAAGATTAATTGATAAACAAGCTT	345
Db		21 GLYGlyIylsterleasplysargLeu	29

## RESULT 11

```

US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METCHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRt
; ORGANISM: Homo sapiens
US-09-371-347A-58

```

**Alignment Scores:**

Pred. No.:	6.41	length:	22
Score:	117.00	Matches:	22
Percent Similarity:	100.00%	Conservative:	0
Best Local Similarity:	100.00%	Mismatches:	0
Query Match:	3.1%	Indels:	0
DB:	1	Gaps:	0

us-09-371-347a-47 (1-2093) x US-09-371-347A-58 (1-22)

QY 1612 ATCCCATCATATATGTTGGTCCAGGAACCGGATAGCCCGTTATTTGGTTCCTACA 1671

Db 1 1186rolleilemetvalglyproglyrnlglylleaapropheileglypheugln 20

QY	1672	CATAGA	1677
Db	21	HisArg	22

RESULT 12  
US-09-371

```

: Sequence 53 Application US/09371347A
:
: GENERAL INFORMATION:
:
: APPLICANT: Gravel, Roy A.
:
: APPLICANT: Rozen, Rima
:
: APPLICANT: Leclerc, Daniel
:
: APPLICANT: Wilson, Aaron
:
: APPLICANT: Rosenblatt, David
:
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

```

```

/ TITLE OF INVENTION: DEECTCS,CARDIOVASCULAR DISEASE, AND CANCER
/ FILE REFERENCE: 50004/003003
/ CURRENT APPLICATION NUMBER: US/09/371,347A
/ CURRENT FILING DATE: 1999-08-10
/ PRIOR APPLICATION NUMBER: 09/232,028
/ PRIOR FILING DATE: 1999-01-15
/ PRIOR APPLICATION NUMBER: 60/071,622
/ PRIOR FILING DATE: 1998-01-16
/ NUMBER OF SEQ ID NOS: 61
/ SOFTWARE: FastSeq for Windows Version 4.0
/ SEQ ID NO 53
/ LENGTH: 23
/ TYPE: prt
/ ORGANISM: Homo sapiens
US-09-371-347A-53

Alignment Scores:
Pred. No.:      6,42      Length:      23
Score:          116.00    Matches:     23
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:     3.09%   Indels:      0
DB:              1       Gaps:        0

```

us-09-371-347a-47 (1-2093) x US-09-371-347A-53 (1-23)

QY 160 GTTGTGTGGTTTCACACCGGGCACCGAGACCCGACACAGCCCGCAAGTTGTT 213  
DB 1 ValValValValSerThrThrGlyThrGlyAspProProAspThrAlaArgLysPheVal 20

QY	220	AAGGAATA	22
Db	21	Lysgluile	23

RESULT 13  
US-09-371

```

? Sequence 25, Application US/09371347A
? GENERAL INFORMATION:
? APPLICANT: Gravel, Roy A,
? APPLICANT: Rozen, Rima
? APPLICANT: Lecierte, Daniel
? APPLICANT: Wilson, Aaron
? APPLICANT: Rosenblatt, David
? TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
? TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING
? TITLE OF INVENTION- DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
? FILE REFERENCE: 50004/003003
? CURRENT APPLICATION NUMBER: US/09/371,347A
? CURRENT FILING DATE: 1999-08-10
? PRIOR APPLICATION NUMBER: 09/232,028
? PRIOR FILING DATE: 1999-01-15
? PRIOR APPLICATION NUMBER: 60/071,622
? PRIOR FILING DATE: 1998-01-16
? NUMBER OF SEQ ID NOS: 61
? SOFTWARE: FastSeq for Windows Version 4.0
? SEQ ID NO 25
? LENGTH: 18
? TYPE: prt
? ORGANISM: Homo sapiens
? US-09-371-347A-25

```

**Alignment Scores:**

Pred. No.:	10.9	Length:	18
Score:	109.00	Matches:	18
Percent Similarity:	100.00%	Conservative:	0
Best Local Similarity:	100.00%	Mismatches:	0
Query Match:	2.90%	Indels:	0
DB:	1	Gaps:	0

US-09-371-347a-47 (1-2093) X US-09-371-347A-25 (1-18)

QY 1710 GGAGCAATGTGGTTGTTTTGGCTGCAGCATAGGATAGGATTATCTATTC 1763

```

Db      1  GLYALMwETTpLpLePheGcYlYsArGrHlSLySaPaRgAaPtyrLeuPhe 18

RESULT 14
US-09-371-347A-55
: Sequence 55, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Leclerc, Daniel
: APPLICANT: Rozen, Rima
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: PRIOR FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 55
: LENGTH: 19
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.:      12.7      Length:      19
Score:          104.00    Matches:      19
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    2.77%    Indels:      0
DB:             1       Gaps:          0

us-09-371-347a-47 (1-2093) x US-09-371-347A-55 (1-19)
Oy      1342  CTTCAACCCAGACCATATTGCGTGCAGACTCAAGTTATTTCACCCAGAAAGCTC 1398
Db      1  LeuGlnProAlaGProTyrSetCysAlaIserSerIeuPheHisProGlyLysLeu 19

RESULT 15
US-09-371-347A-52
: Sequence 52, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: PRIOR FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 52
: LENGTH: 20
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:      14.3      Length:      20
Score:          100.00    Matches:      20

```

```

US-09-371-347a-47 (1-2093) x US-09-371-347A-52 (1-20)
Oy      10 TTTCGTATCATATATGCTACACACAGGAGCAAGGCCATCGACAGAAATGCT 69
      |||||||
Db      1 PheuleuLeuYrAlaItnGInGInGInGInGInAlaYsaIaIleAlaGluGluwecys 20

RESULT 16
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. NO.:      28.4      Length:      17
Score:          87.00     Matches:      17
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:      2.31%   Indels:      0
DB:               1      Gaps:        0

US-09-371-347a-47 (1-2093) x US-09-371-347A-57 (1-17)
Oy      1450 CTGCGGAAGGAGATGATGACAGGCTGGCCCTTTGTTGCTTCAGTT 1500
      |||||||
Db      1 LeuAlrGysGlyValCysTnGInGlyTTrpLeuAlaLeuLeuValAlaSerVal 17

RESULT 17
US-09-371-347A-56
; Sequence 56, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0

```

```

; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56

Alignment Scores:
Pred. No.: 73          Length: 14
Score: 68.00          Matches: 14
Percent Similarity: 100.00%  Conserves: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.81%          Indels: 0
DB: 1                  Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-56 (1-14)

QY 1402 TTTCCTTCAACATTTGGAATTTCTGTCTACTGCCACACA 1443
Db 1 Phevalpheasnilevalglupheleuserthralthrthr 14

RESULT 18
US-09-371-347A-22
; Sequence 22: Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 59004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRT
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Pred. No.: 2.82          Length: 682
Score: 61.50          Matches: 113
Percent Similarity: 33.27%  Conserves: 61
Best Local Similarity: 21.61%  Mismatches: 175
Query Match: 1.65%          Indels: 175
DB: 1                  Gaps: 29

us-09-371-347a-47 (1-2093) x US-09-371-347A-22 (1-682)

QY 1353 TCTGGGTGAGATTAGGAAGATG---TTCAGACGAGAGATGAGTGGCTGCGACAGA 1297
Db 168 SerAsnLeuysleuAenGlnValylThrGluGluGluLysAlaLeuLeuGlnLys 187
QY 1296 AGGCAAAAGCAGAGAGATCCACAAGACGACGACGATTCGTGTAACAAGCGGCTATA 1237
Db 188 Arg11eGluAspGluGlnSerAspAspGluGlyArgGly-----ArgVal 202
QY 1236 ATGGGCTGCCCTTGTACTGACAGCTCTGTAGCTGCGCTTTTCAGACCTGTACT 1177
Db 203 lIeGly-----lIeAspMeLeu11eProGluH1sTyraSP1YrProGlu 217
QY 1176 GGTAATGTCACAAGGCGCTGCAAAAATGCTTTTAGAATTGCTCGAATTTCAAGACA 1117
Db 218 lIeSerLeuLeuysGlySerGln-----Thr 226

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QY 1116 CCAGTAAATGAACTGAGAGAACATCCCGAGGATATGCTGGGTAAGTAGTCC 1057
Db 227 LeuSerAsnAspGluAsnLeuAlaArgVal-Pro-----lIeAlaPr 239
QY 1056 TTTCCTTGTGTCTGCTTATTTTCAAAAGACGAGTCTCTTTATCTTCAAC 997
Db 239 oGlnProPhe11eAlaSerSerValSerAsnArg-----LysLeuProGluAspTh 256
QY 996 CTCGAGCTTTGAGTAGAGCTTTGTACCTCAGAAATCACTTTAGGCGAGTCA 937
Db 256 rLysLeuGluTrpGlnAsnLeuys-----LysMeProGlyValAlaThr----- 271
QY 936 GGCATCTCCAGGCTGATAGGAAAAGTCTGATTGGAATGCCAATTTCAACGACAGT 877
Db 272 -----LysProPheGluVal-----Le 277
QY 876 GGTTTTATGCACTATTCGTAGTAAGTTGAACCTGTTGAAATGGCACTGAAAAC 817
Db 277 uVal1AlaSer1AlaGluPheValThrAspProPheSerLys11eLysThrLysArgMe 297
QY 816 TGGATCTGCTGAGTCAAGAT-----ACTGCTTCTCCTCGGCAAGAGACTCC-- 765
Db 297 t11eThrValAspPheGlyAspH1sAlaAlaGluLeuGlnTyrlupProGlyAspAla11 317
QY 764 -----TGC-----AGATGTACCTG 751
Db 317 eTyrlupCyAsValProAsnProAlaLeuGluValaAsnPhel1eLeuLysArgCyS----- 335
QY 750 TAAATATTCGGGGGTAAACAGGAATATTCAGAGAGGCTTGAG-----AGTG 700
Db 336 -----GlyValLeuAsp11eAlaAspGlnGlnCySglnLeuSer11eAsnPr 351
QY 699 GGGTACCGAACGGGTAAAGTAGAGACTCAAAAGTCT-----TCAATTACAACATTGGA 649
Db 351 oLysThrGluLys11eAsnAlaGln11eProGlnH1sValH1sLys11eThrThrLeuAr 371
QY 648 TTGGTGTCTGTCACTGCAATTTGCTTCAAAACCTCAGAAATCTTTCTTCTGAATC 589
Db 371 gH1sMetPheThrThrCysLeuAsp11eAlaArgAla1aProGly---ArgProLeu11eAr 390
QY 588 GAATCTCAGAGCTGCACCTTGAGAT-----TCAATGTGTG 553
Db 390 gVal11eAlaGluSerThrSerAspProAsnGlnLysArgArgLeuLeuGlnLeuCySbe 410
QY 552 CAGC-----TCTGACTTCAACAAGTCTGCTGCTCCTCAAGATCAGATGCA 511
Db 410 rAlaGlnGlyMetLysAspPheThrAspPheValaArgThrProGlyLeuSerLeuAlaAs 430
QY 510 TGCACCGGAGTGCAGCACTTATCTCTCTGCTTCTGCTGAC-----CTAAATG 457
Db 430 pMeLeuPheAlaPheProAsnValys-----ProProValaAspArgLeu11eGluLe 448
QY 456 CTTTCGAGGGCGTGGCAGAGTTCACCAATCCAGGCTCAACCAAGATTCTAAACTAC 397
Db 448 uLeuProArgLeu11eProArgProArgProLysSerNetSerSerTyrluAsnArgLys----- 466
QY 396 ACAGTCACTGCATGCTCCAGTGCATAGTAAGAAATGCCGGGCTCCAAAGCTTTGAAGT 337
Db 467 -----AlaArgLe 469
QY 336 ATCAATATTCCTCCCATTCGCAAAAGTAGTGTAATTCTGAATCCAGAGCCGATA 277
Db 469 u-----l1eTySerGlnMeGluPheProAlaAh 479
QY 276 CCCATACCGAGGTAGCAAGAAATCAACCGGCAAGTGTGGTGTGATTTCCCTAAC 217
Db 479 rAspGlyArgArgH1sSerArgLysGlyLeuAla1ntrAsp11P-----LeuAs 495
QY 216 AAATCTGCG-----GCTGTGTCGGGTGGGTCTCCGCTG-----183
Db 495 nSerLeuArg11eGlyAspLysValGlnValLeuGlnLysGluProAlaArgPheArgLe 515
QY 182 -----CCCGTGTAGAAACACAAACAAGAGAGA-----153

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Db      515  |||::: |||::: |||:::
      515 uProleuGlYmethrLySaSenSeAlGlYleuProleuMetValGlYPr 535
Qy      152  -----GCTGTTGCGTTTATTAGTCTACTTA----- 126
Db      535  oGlyThrClYAlSerValPheLeuSerPheLeuHleuArgLySeuLySgInAs 555
Qy      125  -----TCGGA-TTCACTAATACAGTGAAGATC-----TGCAGAAATCC-- 88
Db      555  pSerProSerAspPheValAspValProArgValLeuPheGlyCySaLgAspSerSe 575
Qy      87  -----ATGTAACGACAGCTTGCTCAGACATTCTTTCGATGCGCTTGCGCTGTC 38
Db      575  rValAspAlaLeuIleuTyrmetsSerGluLeuGluMetPheValSerGluGlyIleLeuThrAs 595
Qy      37  CCTGCTG 31
Db      595  pleuile 597

RESULT 19
US-09-371-347A-34
; Sequence 34, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-34

Alignment Scores:
Pred. No.: 76.5 Length: 18
Score: 61.00 Matches: 10
Percent Similarity: 72.22% Conservative: 3
Best Local Similarity: 55.56% Mismatches: 5
Query Match: 1.62% Indels: 0
Gaps: 0

us-09-371-347A-47 (1-2093) x US-09-371-347A-34 (1-18)
Qy      1710  GGAGCAATGCGTTGTTTGGCTGCAGGCATTAAGATAGGATTATCTATTC 1763
Db      1  GtYArgMetThrLeuValPheGlyCySaRghIsProGluGluAspHIsleuTyR 18

RESULT 20
US-09-371-347A-35
; Sequence 35, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003

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; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 35
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Gallus gallus
US-09-371-347A-35

Alignment Scores:
Pred. No.: 76.5 Length: 18
Score: 61.00 Matches: 10
Percent Similarity: 72.22% Conservative: 3
Best Local Similarity: 55.56% Mismatches: 5
Query Match: 1.62% Indels: 0
Gaps: 0

us-09-371-347A-47 (1-2093) x US-09-371-347A-35 (1-18)
Qy      1710  GGAGCAATGCGTTGTTTGGCTGCAGGCATTAAGATAGGATTATCTATTC 1763
Db      1  GtYAspMetIleLeuLeuPheGlyCySaRghIsProAspMetAspHisIleTyR 18

RESULT 21
US-09-371-347A-26
; Sequence 26, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 26
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-26

Alignment Scores:
Pred. No.: 85.6 Length: 18
Score: 58.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.54% Indels: 0
Gaps: 0

us-09-371-347A-47 (1-2093) x US-09-371-347A-26 (1-18)
Qy      1710  GGAGCAATGCGTTGTTTGGCTGCAGGCATTAAGATAGGATTATCTATTC 1763
Db      1  GtYcIuThrLeuLeuTyrrTyrgLyCySaRgArSerAspGluAspTyrrLeuTyR 18

RESULT 22
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:

```

```

; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30

```

```

Alignment Scores:
Pred. No.: 85.6 Length: 18
Score: 58.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.54% Indels: 0
DB: 1 Gaps: 0

```

us-09-371-347a-47 (1-2093) x US-09-371-347A-30 (1-18)

```

QY 1710 GGAGCAATGTGTTGTTTGGCTGCAGGCATAGAGTATGATTC 1763
Db 1 GtlyprothralleuphepneglyCysArglyseraspGluaspheleuYr 18

```

```

RESULT 23
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiocapsa roseopersicina
US-09-371-347A-38

```

```

Alignment Scores:
Pred. No.: 88.9 Length: 18
Score: 57.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.52% Indels: 0
DB: 1 Gaps: 0

```

us-09-371-347a-47 (1-2093) x US-09-371-347A-38 (1-18)

```

QY 1710 GGAGCAATGTGTTGTTTGGCTGCAGGCATAGAGTATGATTC 1763
Db 1 GtlyArgasnthrleuphepneglyAsnArgHisPheHisArgaspheleuYr 18

```

```

RESULT 24
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32

```

```

Alignment Scores:
Pred. No.: 95.7 Length: 18
Score: 55.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.46% Indels: 0
DB: 1 Gaps: 0

```

us-09-371-347a-47 (1-2093) x US-09-371-347A-32 (1-18)

```

QY 1710 GGAGCAATGTGTTGTTTGGCTGCAGGCATAGAGTATGATTC 1763
Db 1 GtlyArgMetthrleuValPheglyCysArgArgProAspGluaspHisileuYr 18

```

```

RESULT 25
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29

```

```
Alignment Scores:
Pred. No.: 99.3 Length: 18
Score: 54.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.44% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347a-29 (1-18)
OY 1710 GGAGCAATGCTGTTGCTGCGAGCATAGAGATATCTATTC 1763
Db 1 GlycylserineLeuTyPheGlyCysArgGlySerGluAspTyrIleTyr 18

RESULT 26
US-09-371-347a-28
; Sequence 28, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Drosophila melanogaster
US-09-371-347a-28

Alignment Scores:
Pred. No.: 103 Length: 18
Score: 53.00 Matches: 8
Percent Similarity: 66.67% Conservative: 4
Best Local Similarity: 44.44% Mismatches: 6
Query Match: 1.41% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347a-28 (1-18)
OY 1710 GGAGCAATGCTGTTGCTGCGAGCATAGAGATATCTATTC 1763
Db 1 GlycylserineLeuTyPheGlyCysArgGlySerGluAspTyrIleTyr 18

RESULT 27
US-09-371-347a-61
; Sequence 61, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
```

```
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 61
; LENGTH: 9
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-61

Alignment Scores:
Pred. No.: 721 Length: 9
Score: 51.00 Matches: 9
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.36% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347a-61 (1-9)
OY 2064 AAAGCTACCTTCAGATATTTGGTCA 2090
Db 1 LysArgTyrLeuGlnAspIleTyrSer 9

RESULT 28
US-09-371-347a-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347a-36

Alignment Scores:
Pred. No.: 111 Length: 18
Score: 51.00 Matches: 9
Percent Similarity: 61.11% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 7
Query Match: 1.36% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347a-36 (1-18)
OY 1710 GGAGCAATGCTGTTGCTGCGAGCATAGAGATATCTATTC 1763
Db 1 GlycylserineTyrLeuPheGlyAsnProHisPheThrGluAspPheLeuTyr 18

RESULT 29
US-09-371-347a-37
; Sequence 37, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
```

;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
;; FILE REFERENCE: 50004/003003  
;; CURRENT APPLICATION NUMBER: US/09/371,347A  
;; PRIOR FILING DATE: 1999-08-10  
;; PRIOR APPLICATION NUMBER: 09/232,028  
;; PRIOR FILING DATE: 1999-01-15  
;; PRIOR APPLICATION NUMBER: 60/071,622  
;; PRIOR FILING DATE: 1998-01-16  
;; NUMBER OF SEQ ID NOS: 61  
;; SOFTWARE: FastSeq for Windows Version 4.0  
;; SEQ ID NO 37  
;; LENGTH: 18  
;; TYPE: PRT  
;; ORGANISM: Saccharomyces cerevisiae  
US-09-371-347A-37

Alignment Scores:  
Pred. No.: 111 Length: 18  
Score: 51.00 Matches: 8  
Percent Similarity: 72.22% Conservative: 5  
Best Local Similarity: 44.44% Mismatches: 5  
Query Match: 1.36% Indels: 0  
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-37 (1-18)

Oy 1710 GGAGCAATGCGTGTGTTTGGCTGAGCATAGAGATATCTATTC 1763  
Db 1 GYGLIuValPheLeuTYrLeuGLySerArgHisLysArgLugluTYrLeuTYr 18

RESULT 30  
US-09-371-347A-48  
;; Sequence 48, Application US/09371347A  
;; GENERAL INFORMATION:  
;; APPLICANT: Gravel, Roy A,  
;; APPLICANT: Rozen, Rima  
;; APPLICANT: Leclerc, Daniel  
;; APPLICANT: Wilson, Aaron  
;; APPLICANT: Rosenblatt, David  
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
;; FILE REFERENCE: 50004/003003  
;; CURRENT APPLICATION NUMBER: US/09/371,347A  
;; PRIOR FILING DATE: 1999-08-10  
;; PRIOR APPLICATION NUMBER: 09/232,028  
;; PRIOR FILING DATE: 1999-01-15  
;; PRIOR APPLICATION NUMBER: 60/071,622  
;; PRIOR FILING DATE: 1998-01-16  
;; NUMBER OF SEQ ID NOS: 61  
;; SOFTWARE: FastSeq for Windows Version 4.0  
;; SEQ ID NO 48  
;; LENGTH: 689  
;; TYPE: PRT  
;; ORGANISM: Homo sapiens  
US-09-371-347A-48

Alignment Scores:  
Pred. No.: 4.13 Length: 689  
Score: 50.00 Matches: 70  
Percent Similarity: 35.25% Conservative: 28  
Best Local Similarity: 25.18% Mismatches: 116  
Query Match: 1.34% Indels: 67  
DB: 1 Gaps: 14

us-09-371-347a-47 (1-2093) x US-09-371-347A-48 (1-689)

Oy 841 CCTTGAATGCGACTTGAAATGATCTGCTGAAGTCAAGATACCTTGGC----- 788  
Db 436 ProlenSerLeuPheLeuGLuHisLeuProlYrLeuGLuInProlArgProTYrSerCysAla 455

Oy 787 -----TTTCCTCGGCAAGAGACTCTGCAGATGTAACCTGTAATATTCG 740  
Db 456 SerSerSerLeuPheHisProGLyLys-----LeuHisPheValPheHisLeuVal 472  
Oy 739 GGGGTAAACCAAGAAATATTCAGAGAGCTTGTAGAGTGGGGGTACCGAAGGGTAAAGT 680  
Db 473 GluPheLeuSerThrAlaThrThrGluValLeuArgLysValCysThrGly----- 490  
Oy 679 AGCACTAAAGTCTTCATTAACAACATGGATGTGTCGTCGTCACGCACTTTTGCTCA 620  
Db 491 -----TrrPleu-----AlaLeuValAlaSer 498  
Oy 619 AAACCTCAGATCTTCTTCTGTAATCATCATCATCATCATCATCATCATCATCATCAT 561  
Db 499 ValLeuGLuInProAsnHisLeuHisAlaSerHisGluAspSerLysValAlaLeuAlaProLys 518  
Oy 560 ATGTGTAGACGCTCTGACTTCAACAAGCTGTGC-----CTCAAGAT----- 519  
Db 519 IleSerIleSerProArgThrThrAsnSerPheHisLeuProAspProSerIlePro 538  
Oy 518 -----GCAGGTATGCGCCAGGAGTGGCGCACTTATCTCTCTGCTGCTGCT 468  
Db 539 IleIleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGLuHisArg 558  
Oy 467 GACCTAAA-----TGCCTTCTGAGGGCT 444  
Db 559 AsnSerLysAsnAsnThrGlnMetGluIleLeuGLuGLuInCysGlyCysPheLeuAla 578  
Oy 443 GGGCAGAGTCCAGCAATCCAGGCTCAACCAAGTTCTTAACCTTACACAGTATC-TGC 385  
Db 579 GlyIleArgIleGlyIleIleTYrSerGluLysSer-----AspIleSerLeuSer 596  
Oy 384 ATGTCCAGTGTCTAGAAATGCCGGCTCCAGCTCTG----- 346  
Db 597 MetGlySerLeuIleArgPheProSerGlnMetLeuLeuGLuArgLysPro 616  
Oy 345 ---AAGTCGT-TATCAATATCTTCCCATGTGAAAGTAGGT-----ATTCTG 296  
Db 617 GlnGlnSerMetTYrLysThrThrSerPheMetAlaSerArgTrpArgLysSer 636  
Oy 295 AATCACCGAAGCCAGTACCCTACCGCAGGTGAGCAAGAATCAACCGGAGTGT 236  
Db 637 SerArgArgThrAlaIlePheMetCysValGluMetGlnArgIleTrpProArgMetTYr 656  
Oy 235 GGTTCGTATTTCTTAAACAACTGCGGGCTGTGCGGTGGGTCTCGG----- 185  
Db 657 -----MetMetPro-----LeuCysLysAlaLysArgLeuGLuLeuLysAsnLysGln 672  
Oy 184 TGCCCGTGTAGAAACCAACAAGAGAGAGCTGTTCGTTTAAAGTCAAT 131  
Db 673 LysProTrp---ProlenLysLysLysAsnAlaThrPheArgIlePheGlyHis 689

RESULT 31  
US-09-371-347A-27  
;; Sequence 27, Application US/09371347A  
;; GENERAL INFORMATION:  
;; APPLICANT: Gravel, Roy A,  
;; APPLICANT: Rozen, Rima  
;; APPLICANT: Leclerc, Daniel  
;; APPLICANT: Wilson, Aaron  
;; APPLICANT: Rosenblatt, David  
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
;; FILE REFERENCE: 50004/003003  
;; CURRENT APPLICATION NUMBER: US/09/371,347A  
;; PRIOR FILING DATE: 1999-08-10  
;; PRIOR APPLICATION NUMBER: 09/232,028  
;; PRIOR FILING DATE: 1999-01-15  
;; PRIOR APPLICATION NUMBER: 60/071,622  
;; PRIOR FILING DATE: 1998-01-16  
;; NUMBER OF SEQ ID NOS: 61  
;; SOFTWARE: FastSeq for Windows Version 4.0



```
; SEQ ID NO 27
; LENGTH: 18
; TYPE: PR
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-27

Alignment Scores:
Pred. No.: 119 Length: 18
Score: 49.00 Matches: 8
Percent Similarity: 61.11% Conservative: 3
Best Local Similarity: 44.44% Mismatches: 7
Query Match: 1.30% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-27 (1-18)

Oy 1710 GGAGCAATGCTGTTGCTTGGCTGAGCATAGATGATATCTATTC 1763
Db 1 G1G1uThrLeuLeuTyTYrG1yCyArGArGAlaAlaGluAspTyLeuTyx 18

RESULT 32
US-09-371-347A-23
; Sequence 23, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 23
; LENGTH: 677
; TYPE: PR
; ORGANISM: Homo sapiens
US-09-371-347A-23

Alignment Scores:
Pred. No.: 433 Length: 677
Score: 49.00 Matches: 20
Percent Similarity: 45.12% Conservative: 17
Best Local Similarity: 24.39% Mismatches: 27
Query Match: 1.31% Indels: 18
DB: 1 Gaps: 4

us-09-371-347a-47 (1-2093) x US-09-371-347A-23 (1-677)

Oy 695 ACCGACGGTAGTGAGGACTCAAGTCTTCAATTACACATTGATGCTGCTTC 636
Db 13 SerGluAlaValAlaGluGlu---ValSerLeuPheSerMetThrAspMetIleLeuPhe 31

Oy 635 ACTGCA-----TTTGCTTCAAAACCTCGAATCCTTTCCTT 600
Db 32 SerLeuIleValG1yLeuLeuThrTyTTPheLeuPheArgLySLySLyGluGluVal 51

Oy 599 CCTGAATCATGATCTCGAAGCTCGACTGAGATTCATGATGTAGACGCTGACTTC 540
Db 52 ProGluIleTherTrLySLieGlnThLeuThr-----SerSerValArgGluSerSerPhe 69

Oy 539 ACA-----AGCTCTCTCTCAAGATGAGTGATGATGACCGGG 501
Db 70 ValGluLySMeLySLySLyThrG1yArgSAlleIleValPheTyRGLySerGlnThrG1y 89
```

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Oy 500 AGTCGCG 495
Db 90 ThrAla 91

RESULT 33
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PR
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.: 422 Length: 697
Score: 49.00 Matches: 17
Percent Similarity: 37.88% Conservative: 8
Best Local Similarity: 25.76% Mismatches: 21
Query Match: 1.31% Indels: 20
DB: 1 Gaps: 2

us-09-371-347a-47 (1-2093) x US-09-371-347A-46 (1-697)

Oy 1890 GAAGCTGAGATGTTGCTTGTATCATATCTTGCTGGGGCTTCCTCCCAAGAGCAT 1831
Db 419 AspAlaCySaLaCySLeuleuAspLeuLeuAlaPheProSerCySLinProLeu 438

Oy 1830 CTTTGAAGAGAACCTTATGATGATGATGATCCATGCTTAAGAAATGCTGAGCT 1771
Db 439 SerLeuLeuLeuGluHisLeuProLyLeuGln----- 449

Oy 1770 CTTTTCGATGATGATATCCCTATCCCTTATGCGCGAGCCAAAGAACACCATTTGCTC 1711
Db 450 -----ProArgProLySerCySaLaSerSerLeu----- 460

Oy 1710 CAAATTTCCATCTGGCT 1693
Db 461 -----PheHisProGly 464

RESULT 34
US-09-371-347A-2
; Sequence 2, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
```



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GENERAL INFORMATION:
APPLICANT: Rozen, Rima A,
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371.347A
PRIOR FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 44
LENGTH: 698
TYPE: PRT
ORGANISM: Homo sapiens
US-09-371-347A-44

Alignment Scores:
Pred. NO.: 4.21 Length: 698
Score: 49.00 Matches: 17
Percent Similarity: 37.88% Conservative: 8
Best Local Similarity: 25.76% Mismatches: 21
Query Match: 1.31% Indels: 20
DB: 1 Gaps: 2

us-09-371-347A-47 (1-2093) x US-09-371-347A-44 (1-698)
QY 1890 GAAGCTGATGTTGCTTGACATACACTTGGGGCTTCTCTCCCAACAGAGCAT 1831
Db 419 AsplacYsAlacYsbleuLeuAlaPheProserCyseInProbleu 438
QY 1830 CTCTGAGAGAAACCTTTCAGATGAGTTAAGATCCCATGCTTAAGAAATGCTGAGCT 1711
Db 439 SerleuLeuGluHleuProlyleuIn----- 449
QY 1770 CTTTTCGAATGATATATCCCTATTCCTTATGCTTCGACGCCAAAAACACACATGCTC 1711
Db 450 -----PraiPrProlyserCyseAlaSerSerleu----- 460
QY 1710 CAAATTCATCTGGGT 1693
Db 461 -----PheHlsProGly 464

RESULT 38
US-09-371-347A-33
Sequence 33, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Rozen, Rima A,
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371.347A
PRIOR FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 33
LENGTH: 18

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```

; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-33

Alignment Scores:
Pred. No.:      150          Length:      18
Score:           42.00        Matches:       8
Percent Similarity: 62.50%    Conservative: 2
Best Local Similarity: 50.00%  Mismatches:   6
Query Match:      1.12%      Indels:       0
DB:               1          Gaps:         0

us-09-371-347a-47 (1-2093) x US-09-371-347A-33 (1-18)

Cy              1716 ATGCGTGTGTTTGGCTGCAGCATTAAGGATATTCATTATC 1763
                ||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
Db              3 MetValIeuValPheGlyCysArgCysSerGIInLeuAspHisIleYr 18

RESULT 39
US-09-371-347A-31
; Sequence 31, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Grazen, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendlatc, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 31
LENGTH: 18
TYPE: PRT
ORGANISM: Homo sapiens
US-09-371-347A-31

Alignment Scores:
Pred. No.:      160          Length:      18
Score:           40.00        Matches:       7
Percent Similarity: 62.50%    Conservative: 3
Best Local Similarity: 43.75%  Mismatches:   6
Query Match:      1.06%      Indels:       0
DB:               1          Gaps:         0

us-09-371-347a-47 (1-2093) x US-09-371-347A-31 (1-18)

Cy              1716 ATGCGTGTGTTTGGCTGCAGCATTAAGGATATTCATTATC 1763
                ||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
Db              3 MetValIeuValPheGlyCysArgGIInSerIylLeaspHisIleYr 18

RESULT 40
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Grazen, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendlatc, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
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; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15,622
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.: 180      Length: 19
Score: 34.50      Matches: 7
Percent Similarity: 50.00%      Conservative: 3
Best Local Similarity: 35.00%      Mismatches: 5
Query Match: 0.92%      Indels: 5
DB: 1      Gaps: 1

us-09-371-347a-47 (1-2093) x US-09-371-347A-55 (1-19)
OY 1752 CCTATCCTTATGCTGCAGCCAAAACACACATTGCTCCAAAATTTCATCTGGGT 1693
Db 3 ProchrotrYrserCySaIaSerSerSeu-----PhehiPrGly 17

RESULT 41
US-09-371-347A-39
; Sequence 39, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Gravel, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 39
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Pisum sativum
US-09-371-347A-39

Alignment Scores:
Pred. No.: 183      Length: 19
Score: 34.00      Matches: 6
Percent Similarity: 53.85%      Conservative: 1
Best Local Similarity: 46.15%      Mismatches: 6
Query Match: 0.90%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-39 (1-19)
OY 1710 GGAGCATGTGTTTGGCTGCAGCATAGAT 1748
Db 1 GlyeuhlatrpuenpheluGlyVajAlahsnvalasp 13

RESULT 42
US-09-371-347A-40
; Sequence 40, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
```

```

; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347A-36

Alignment Scores:
Pred. No.: 214      Length: 18
Score: 30.00      Matches: 4
Percent Similarity: 85.71%      Conservative: 2
Best Local Similarity: 57.14%      Mismatches: 1
Query Match: 0.80%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-36 (1-18)
OY 1710 GGAGCATGTGTTTGGCTGCAGCATAGAT 1733
Db 1 GlyeuhlatrpuenpheluGly 8

RESULT 43
US-09-371-347A-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347A-36

Alignment Scores:
Pred. No.: 209      Length: 18
Score: 31.00      Matches: 5
Percent Similarity: 62.50%      Conservative: 0
Best Local Similarity: 62.50%      Mismatches: 3
Query Match: 0.82%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-40 (1-18)
```

```
QY      1863 ATATCTTGCATCTCCACAC 1943
      ::|||::|::|::|::|
Db      5 LeuphepeglyAanProHis 11

RESULT 44
US-09-371-347A-59
; Sequence 59, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 59
; LENGTH: 6
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-59

Alignment Scores:
Pred. No.:      1.08e+03      Length:      6
Score:          29.00         Matches:      6
Percent Similarity: 100.00%   Conservative: 0
Best Local Similarity: 100.00% Mismatches:      0
Query Match:      0.77%       Indels:          0
DB:              1           Gaps:            0

us-09-371-347a-47 (1-2093) x US-09-371-347A-59 (1-6)
QY      1818 TCCTTCTCAGAGATGCT 1835
      |||||
Db      1 SerpheserArgaspala 6

RESULT 45
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

Alignment Scores:
```

```
Pred. No.:      183
Score:          29.00         Length:      22
Percent Similarity: 60.00%   Matches:      6
Best Local Similarity: 60.00% Conservative: 0
Query Match:      0.78%       Mismatches:      4
DB:              1           Indels:          0
                        Gaps:            0

us-09-371-347a-47 (1-2093) x US-09-371-347A-58 (1-22)
QY      515 GGTGATGCCACCGGAGTGGCCCACTTATC 486
      |||
Db      7 GlyProglythrGlyIleAlaProPhele 16

Search completed: May 9, 2005, 15:34:18
Job time : 27.5 secs
```

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GenCore version 5.1.6  
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OM nucleic - protein search, using frame\_plus\_n2p model

Run on: May 9, 2005, 15:31:35 ; Search time 5 Seconds  
(without alignments)  
5.055 Million cell updates/sec

Title: us-09-371-347a-43  
Perfect score: 3768  
Sequence: 1 atgagagagcttcgtctac.....cttcagatattgctcataa 2097

Scoring table: BIOSUM62  
Xgapop 10.0 , Xgapext 0.5  
Ygapop 10.0 , Ygapext 0.5  
Fgapop 6.0 , Fgapext 7.0  
Delop 6.0 , Delext 7.0

Searched: 34 segs, 6026 residues  
Total number of hits satisfying chosen parameters: 68

Minimum DB seg length: 0  
Maximum DB seg length: 2000000000  
Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

Command line parameters:  
-MODEL=frame+n2p,model -DEV=soft -Q=us-09-371-347a-43 -DB=US09371347A-pep  
-SUFFIX=ptc -OUT=align43 -MINMATCH=0.1 -LOOPEL=0 -LOOPEXT=0 -UNIT=bits  
-START=1 -END=1 -MATRIX=blomsum62 -TRANS=human40.cdi -LIST=45 -DOCALIGN=200  
-THR SCORE=ptc -THR MAX=100 -THR MIN=0 -ALIGN=45 -MODE=LOCAL -OUTFMT=ptc  
-NORM=ext -HEADSIZE=500 -MINLEN=0 -MAXLEN=200000000 -NCPU=6 -NO XLPXY  
-NEG SCORES=0 -LONGLOC -THRADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOF=6 -FGAPEXT=7  
-YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7

Database : US09371347A.pep:\*

Pred. No. is the number of results predicted by chance to have a  
score greater than or equal to the score of the result being printed,  
and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	3613	95.9	698	1	US-09-371-347A-2
2	3613	95.9	698	1	US-09-371-347A-21
3	3613	95.9	698	1	US-09-371-347A-44
4	3609	95.8	698	1	US-09-371-347A-42
5	3598.5	95.5	697	1	US-09-371-347A-46
6	3470	92.1	689	1	US-09-371-347A-48
7	912	24.2	682	1	US-09-371-347A-22
8	731.5	19.4	677	1	US-09-371-347A-23
9	215	5.7	41	1	US-09-371-347A-60
10	158	4.2	29	1	US-09-371-347A-54
11	117	3.1	22	1	US-09-371-347A-58
12	116	3.1	23	1	US-09-371-347A-53
13	109	2.9	18	1	US-09-371-347A-25
14	104	2.8	19	1	US-09-371-347A-37
15	100	2.3	20	1	US-09-371-347A-52
16	87	2.3	17	1	US-09-371-347A-57
17	88	1.8	14	1	US-09-371-347A-56
18	64.5	1.7	682	1	US-09-371-347A-22
19	61	1.6	18	1	US-09-371-347A-34
20	61	1.6	18	1	US-09-371-347A-35
21	58	1.5	18	1	US-09-371-347A-26

22	58	1.5	18	1	US-09-371-347A-30	Sequence 30, Appl
23	57	1.5	18	1	US-09-371-347A-38	Sequence 38, Appl
24	55	1.5	18	1	US-09-371-347A-32	Sequence 32, Appl
25	54	1.4	18	1	US-09-371-347A-29	Sequence 29, Appl
26	53	1.4	18	1	US-09-371-347A-28	Sequence 28, Appl
27	51	1.4	9	1	US-09-371-347A-61	Sequence 61, Appl
28	51	1.4	18	1	US-09-371-347A-37	Sequence 37, Appl
29	51	1.4	18	1	US-09-371-347A-36	Sequence 36, Appl
30	50	1.3	689	1	US-09-371-347A-48	Sequence 48, Appl
31	50	1.3	697	1	US-09-371-347A-46	Sequence 46, Appl
32	50	1.3	698	1	US-09-371-347A-2	Sequence 2, Appl
33	50	1.3	698	1	US-09-371-347A-21	Sequence 21, Appl
34	50	1.3	698	1	US-09-371-347A-42	Sequence 42, Appl
35	50	1.3	698	1	US-09-371-347A-44	Sequence 44, Appl
36	49	1.3	18	1	US-09-371-347A-27	Sequence 27, Appl
37	49	1.3	677	1	US-09-371-347A-23	Sequence 23, Appl
38	42	1.1	18	1	US-09-371-347A-33	Sequence 33, Appl
39	40	1.1	18	1	US-09-371-347A-31	Sequence 31, Appl
40	34.5	0.9	19	1	US-09-371-347A-55	Sequence 55, Appl
41	34	0.9	19	1	US-09-371-347A-39	Sequence 39, Appl
42	31	0.8	18	1	US-09-371-347A-40	Sequence 40, Appl
43	30	0.8	18	1	US-09-371-347A-36	Sequence 36, Appl
44	29	0.8	6	1	US-09-371-347A-59	Sequence 59, Appl
45	29	0.8	22	1	US-09-371-347A-58	Sequence 58, Appl

## ALIGNMENTS

RESULT 1  
US-09-371-347A-2  
; Sequence 2, Application US/09371347A  
; GENERAL INFORMATION:  
; APPLICANT: Gravel, Roy A,  
; APPLICANT: Rozen, Rima,  
; APPLICANT: Lecierc, Daniel  
; APPLICANT: Wilson, Aaron  
; APPLICANT: Rosenblatt, David  
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
; FILE REFERENCE: 50004/003003  
; CURRENT APPLICATION NUMBER: US/09/371,347A  
; CURRENT FILING DATE: 1999-08-10  
; PRIOR APPLICATION NUMBER: 09/232,028  
; PRIOR FILING DATE: 1999-01-15  
; PRIOR APPLICATION NUMBER: 60/071,622  
; PRIOR FILING DATE: 1998-01-16  
; NUMBER OF SEQ ID NOS: 61  
; SOFTWARE: FastSeq for Windows Version 4.0  
; SEQ ID NO 2  
; LENGTH: 698  
; TYPE: PRT  
; ORGANISM: Homo sapiens  
US-09-371-347A-2

## Alignment Scores:

Pred. No.: 1.7e-66 Length: 698  
Score: 3613.00 Matches: 697  
Percent Similarity: 99.86% Conservative: 0  
Best Local Similarity: 99.86% Mismatches: 1  
Query Match: 95.89% Indels: 0  
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-2 (1-698)

QY	1	ATGAGAGGTTCTGTTACTATGCTACACAGGAGGACAGGAAGCCATCGCAGAA	60
DB	1	Metargargphleuleuleutyralathrcinlncnglyginalalybalaillealeglu	20
QY	61	GAATGTGTGACAGCTGTGTGACATGAGATTTTCTGACATCTTCACTATATTAGTCAA	120
DB	21	GlumetcyssuglinalaivaivaiahlglypheseralaaepLeuhtiscyailleserclu	40

QY	121	TCGCATAGTAGTATGACCTTAAACCGGAAACACCTCTCTCTGTGTGTGGCTTTACACAG	180
Db	41	SeraspysrlyraapleuLysrthglulthrAlaProleuValValValSerthrThr	60
QY	181	GGCACCGGAGACCCACCGCACAGCCCGCAAGTTGTGTAAGAAATACAGAACCAACA	240
Db	61	GlythrGlYasProProPhePThrAlaArgLysPheValLysGluIleGlnAsnGlnThr	80
QY	241	CTGCGCGGTGATTTCTTGTGCTCACCTGCGGTATGGGTACTGGGTCTCGGTATTCAGAA	300
Db	81	LeuProValAspPhePheAlaHisLeuArgLysrGlYLeuLeuGlyLeuGlyAspSerGlu	100
QY	301	TACACCTTACTTTTGCAATGGGGGGGAGAGTAATTGATTAACGACTTCACAGACTTGGAGCC	360
Db	101	TyrThrTyrPheCysAsnGlyGlyLysIleLeuAspLysaaGlyLeuGlnIleuGlyAla	120
QY	361	CGGCAATTTCTATGACACTGACATGACAGATACGTGTAGGTTTAAAGACTTGTGGTTAG	420
Db	121	ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGlnLeuValGlu	140
QY	421	CCGTGATTTGCTGACCTCTGGCCAGCCCTCAGAAAGCAATTTTAAAGTCACAGACAGCA	480
Db	141	ProThrIleAlaGlyLeuTyrProAlaLeuArgLysHisPheArgSerSerArgGlyGln	160
QY	481	GAGAGAGTAATATGGCGCCTCCCGGTGGACACACTGATCTCTTGAGACAGACTTGTG	540
Db	161	GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuValGlnThrAspLeuVal	180
QY	541	AAGTCAGAGCTGCATACATTTGAATCTCAATCGAGCTTCTGAGATTGATGATTCAGCA	600
Db	181	LysSerGluLeuLeuHisIleGluSerGlnAlaGluLeuLeuArgPheAspSerGly	200
QY	601	AGAAAGATTCYAGGTTTGAAGCAAAATGCAGTAAACAGCAACCAATCCATGTTGTA	660
Db	201	ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal	220
QY	661	ATTGAAGCTTTGAGTCTCTCACTTAACCCGTTCCGGATCCGCCCACTCTCAAGCCTCTCTG	720
Db	221	IleGlnAspPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu	240
QY	721	AATATTCCTGGATTAAACCCCAAGATATTTACAGGTAACATCTGCAGAGATCTCTTGGCAG	780
Db	241	AsnIleProGlyLeuProProGluTyrIleuGlnValHisLeuGlnGlnSerLeuGlyGln	260
QY	781	GAGAAAGCCCAAGATCTGTGACTTCAGCAGATCCAGTTTTCAGTGCCAAATTCAAAG	840
Db	261	GluGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys	280
QY	841	GCAGTTCACTTACTAGCAATGATGATCCATAAAACCACTCTGCTGTGATTTGGACATT	900
Db	281	AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle	300
QY	901	TCAATATCAGACTTTTCTATCAGCTGTGAGATGGCTTCACCGATCTGCGCTTAACAGT	960
Db	301	SerSerThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer	320
QY	961	GATTCTGAGGTACAAAGCTTACTCCAAAGACTGCAGCTTGAAAGATAAAGAGAGCACTGC	1020
Db	321	AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGluHisCys	340
QY	1021	GTCTCTTTGAATAATTAAGCAGACACAAAGAAAGAGAGCTTACTTACCCAGATATA	1080
Db	341	ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle	360
QY	1081	CCGTGGGAGATTTCTCTCAGGTCAATTTTACCTGTGTCCTTGAAATCCAGACAAATTCCT	1140
Db	361	ProAlaGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGluIleArgAlaIlePro	380
QY	1141	AAAAAGCATTTTTCGAGCCCTTGTGACTATACCACTGACAGTGCATAAAGCGCAGG	1200
Db	381	LysLysAlaPheLeuArgAlaLeuValAspLysTyrThrSerAspSerAlaGluLysArgArg	400
QY	1201	CTACAGAGACTGTGCACTTAAACMAAGGGGACCCGATTATAGCCGTTTGTACAGATGCC	1260

[illegible]

```

RESULT 2
US-09-371-347A-21
/ Sequence 21, Application US/09371347A
/ GENERAL INFORMATION:
/ APPLICANT: Gravel, Roy A.
/ APPLICANT: Rozen, Rima
/ APPLICANT: Leclerc, Daniel
/ APPLICANT: Wilson, Aaron
/ APPLICANT: Rosenblatt, David
/ TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
/ TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
/ TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
/ FILE REFERENCE: 50004/003003
/ CURRENT APPLICATION NUMBER: US/09/371,347A

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CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 21
LENGTH: 698
TYPE: PRT
ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 1,7e-66 Length: 698
Score: 3613.00 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 1
Query Match: 95.89% Indels: 0
Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-21 (1-698)

QY      1 ATGAGAGAGTTCTGTATATATGTAACAGCAGGACGGCAAGCCATCGCAGA 60
Db      1 MetAgaAgPheLeuLeuLeuTyRAlatRngInglYlnAlaLysAlaIlealaglu 20

QY      61 GAAATGTGAGACAAGCTGTGGACATGGATTTCGCAGATCTTCACTATATTAGTGA 120
Db      21 GluNeCySGlInGlmlaValaValHlsGlyneSerAlaSpneuHicYslIeserGlu 40

QY      121 TCCGATAAGTATGACTTAACAAAACGAAACAGCTCCTCTTGTTGGTTGTTCACCAG 180
Db      41 SerAapLyStyAspLeuLeuThrGluTrnAlaProLeuValValValSerTrnThr 60

QY      181 GGCAACCGAGACCCACCGACACAGCCGCCAGTTGTTAAGAAATACAGAACCAAACA 240
Db      61 GlyTrnGlyAspProAspTrnAlaArgLysPheValIleSgIlleGlnaenGlnThr 80

QY      241 CTGCCGGTTGATTTCTTTGCTCACCGTGGGATAGGTTACTGGGTCCTCCGGTATTGAA 300
Db      81 LeuProValaAspPhePheAlaHisueaGlyrGlyLeuLeuGlyLeuGlyAspserGlu 100

QY      301 TACACCTACTTTGCAATGGGGGAGATATGATTAACGACTTCACAGAGCTTGAGCC 360
Db      101 TyrTrnTrpPhcCysasnGlyGlyLysIlelleAspLysArgLeuGlnGluGlyAla 120

QY      361 CGCATTTCTATGACACTGACATGACATGACTGTGTAGGTTTAGAATTGTGTTGAG 420
Db      121 ArgHisPheTyAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValValGlu 140

QY      421 CCGTGATTTGCTGACACTGTGCCACGCCCTCAGAAACATTTTNGTTCAGACAGACAA 480
Db      141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSerSerArgGlyGln 160

QY      481 GAGAGATTAAGTGGGCGCACTCCCGGGGAGATCACTGCATCTTTGAGGACAGACTTGTG 540
Db      161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180

QY      541 AAGTCAGAGCTGCTACACATTGAATCTCAAGTGCAGCTTCTTGAGATTGCATGATTGAGA 600
Db      181 LysSerGluLeuLeuHisIleGlnSerGlnValGluLeuLeuArgPheAspAspserGly 200

QY      601 AGAAGAGATTCTGAGGTTTTGAAAGCAAAATGCGATGGAACAGCAACCAATCCATGTTGTA 660
Db      201 ArgLysAspSerGlyValLeuLysGlnAlaAlaValaAsnSerAsnGlnSerAsnValVal 220

QY      661 ATTGAAGATTGAGGCTCATCTTACCCGTTGGGTACCCCACTTCACAAGGCTCTGTG 720
Db      221 IleGluAspPheGluSerLeuTrnArgSerValProProLeuSerGlnAlaSerLeu 240

QY      721 AATATTCCTGTTTACCCCAATATTTACAGATCAATCTGCAGAGAGTCTCTTGCCAG 780

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D	241	Asn1LeProGlyLeuProProGluTyrLeuGlnValHisLeuGlnGlnGlnSerLeuGlyGln	260
Q	781	GAGAAAGCCAGATATGTGTGACTTCAAGCAGATCCAGTTTTCAGTGGCCAAATTTCAAG	840
D	261	GlnGlnSerGlnValSerValThrSerAlaSerProValPheGlnValProIleSerLys	280
Q	841	GCAGTTCACTTACTACGAATGAGCCATAAAACACTGCGCGGTAAGATTGGCAATT	900
D	281	AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlyLeuAspIle	300
Q	901	TCAAAATACAGACTTTTCCATCCATCAGCCCGAGATCCCTTCAGCCGATCCGCGCTAAAGT	960
D	301	SerLeuThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer	320
Q	961	GATTCTGAGTACAAAGCTTACTCCAAAGCTCGAGCTTGAGATGAATAAAGAGCACTGC	1020
D	321	AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnIleAspLysValCysGlnHisCys	340
Q	1021	GTCCTTTTGAAATATTAAGCGACACAAAGAAAGAGGTACCTTAACCCCGACATATA	1080
D	341	ValLeuLeuLysValIleLysValAspThrLysLysValGlyAlaThrLeuProGlnHisIle	360
Q	1081	CCGCGGGAGATGTCCTCCAGTATATTTCACCGTGTCTTGAAATCCGAGCAATTCCT	1140
D	361	ProAlaGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGlnIleArgAlaIlePro	380
Q	1141	AAAAAGCATTTTTCGAGCCCTTGAGACTATACCAAGTACAGTGCAGTGTGAAAGCGCAGG	1200
D	381	LysLysAlaPheLeuAlaArgAlaLeuValAspLysThrSerAspSerAlaGlnLysArgArg	400
Q	1201	CTACAGAGCTGTGTGAGTAAACAAAGGGCAGCCGATTAATAGCCGCTTTGACAGATATGC	1260
D	401	LeuGlnGlnLeuCysSerLysGlnGlyAlaAlaAspLysSerArgPheValAlaArgAla	420
Q	1261	TGTGCGCTGTTGTTGATATCTCTCCGCGCTTCCCTTTGGCCAGCCAGCACTAGTCTC	1320
D	421	CysAlaCysLeuLysAspLeuLeuLeuAlaPheProSerCysGlnProLeuSerLeu	440
Q	1321	CTGCTCGAAACATCTTCTTAAATCTTCAACCCAGACATATTCGTGTGCAAGCTCAAGTTTA	1380
D	441	LeuLeuGlnHisLeuProLysLeuGlnProArgProLysCysValAspSerLeu	460
Q	1381	TTTCAACCCAGAAAGCTCCATTTTGTCTTCAACATTGTGAAATTTGTGTACTGCCACA	1440
D	461	PheHisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr	480
Q	1441	ACAGAAGTTCGCGGAAGGAGATATGACAGCGCTGCGCTGTTGGTTGGCTTCAAGTT	1500
D	481	ThrGlnValLeuAlaGlyLysGlyValCysThrGlyTyrPheValLeuLeuValAlaSerVal	500
Q	1501	CTTACGCGAAACATATCATGATCCCATGAGACAGCGGGAAGGCTGGCTCCATAATA	1560
D	501	LeuGlnProAsnIleHisAlaSerHisIleGlnAspSerGlyLysAlaLeuAlaProLysIle	520
Q	1561	TCCATCTCTCTCGAACAAACAATCTTTTCCATTCACAGATGACCCCTCAATCCCATC	1620
D	521	SerIleSerProArgThrThrAsnSerPheHisLeuProAspArgProSerIleProIle	540
Q	1621	ATAATGTGGGTCCAGAAACCGGACATAGCCCGCTTATGGGTCCCTTAACAATTAAGAG	1680
D	541	IleMetValGlyProGlyThrGlyTyrLeuAlaProHisIleGlyPheLeuGlnHisArgGly	560
Q	1681	AAACCTCCAAAGAACACCCAGATGGAATTTTGGAGCAATGTGGTGTGTTTTGGCTGC	1740
D	561	LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaMetThrLeuPhePheGlyCys	580
Q	1741	AGGCATTAAGATAGGATATATCTATTCAAAAAGAGTCCAGACATTTCTTAACCATGGG	1800
D	581	ArgHisLysAspArgAspLysLeuPheArgLysGlyLeuArgHisPheLeuHisGly	600
Q	1801	ATCTTAATCATCTAAAGGTTTCTTGTCAAGAAATGCTCTGTGGGAGAGGAAGCC	1860
D	601	IleLeuThrHisLeuLysValSerPheSerThrArgAspAlaProValGlyGlnGlnGlnAla	620

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QY 1861 CCAGCAAGTATGTACAGACAAATCATCCAGCTTCATGAGCCAGAGGTGGCAGAAATCTC 1920
Db 621 ProAlaIystrYValIGlnAspAsnIleGlnLeuHISglYngInValAlaIyIleu 640
QY 1921 CTCGAGAGAAAGCCCATATTATTATGTGTGTGAGATGCAAAGAAATATGGCCAGATGTA 1980
Db 641 LeuGlnGlnAenGlyHISileTyValCYseGlyAspAlaLysAsnMetAlaLysAspVal 660
QY 1981 CATATATCCCTTGTGCAAAATAATAGCAAGAGGTGGAGTGTGAAAACTTGAAGCATG 2040
Db 661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyValGlnLysLeuGlnAlaMet 680
QY 2041 AAAACCTGGCCACTTTAAAAAGAGAAAAAGCTACCTTCAGATATTGGTCA 2094
Db 681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTyThrLeuGlnAspIleTyrSer 698

RESULT 3
US-09-371-347A-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-44

Alignment Scores:
Pred. No.: 1,7e-66 Length: 698
Score: 3613.00 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 1
Query Match: 95.89% Indels: 0
DB: 1 Gaps: 0

us-09-371-347A-43 (1-2097) x US-09-371-347A-44 (1-698)
QY 1 ATGAGAGAGTTCTGTACTATATGCTACACAGAGGAGACAGGAAAGCCATGCAGAA 60
Db 1 MetArgTrgPheLeuLeuLeuTyAlaThrGlnGlnGlnAlaLysAlaIleGlu 20
QY 61 GAATATGTGAGCAAGCTGTGTGATCATGATTTCTGCAGATCTTCACTATATAGTAA 120
Db 21 GlnMetCysGlnGlnAlaValAlaHISglYpHeSerAlaAspLeuHISThrIleSerGlu 40
QY 121 TCCGATATGATGACTTAAACCGAAACAGCTCTCTGTGTGTGTGTGTCTACACAG 180
Db 41 SerAspLysTyArgPheLysThrGlnThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 60
QY 181 GGCACCGGAGACCCAGCCGACACAGCCGCAAGTTTGTAAAGAAATPACAGAACCAACA 240
Db 61 GlyThrLysAspProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
QY 241 CTGCGGGTTGATTTCTTGTCTCAGCTGCGGTAGAGGTACTGGGTCTCGGATTCAGAA 300
Db 81 LeuProValAspPhePheAlaHISLeuArgTyGlnLysLeuGlnLysAspSerGlu 100
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QY 301 TACACCTACTTTTGCATATGGGGGAGAGATAATTGATTAACGACTTCAAGACTTGGAGCC 360
Db 101 TyThrTyRheCysAsnGlnGlyLysIleIleAspLysArgLeuGlnGlnLeuGlyAla 120
QY 361 CGGCAATTCTATGACACTGTGACATGCAGATGACTGTGTAGCTTTAGAACTTGTGTGAG 420
Db 121 ArgHISpHeTyRAspThrGlnHISAlaAspAspCysValGlnLysLeuGlnLeuValIleGln 140
QY 421 CCGTGATTCCTGACTCTTGGCCAGCCCTCAGAAAGCATTTTGGTCAACAGAGGCAA 480
Db 141 ProTyrIleAGlyLeuTyProAlaLeuArgLysHISpHeArgSerSerArgGlyGln 160
QY 481 GAGGAGATAGTGGCGCAGCTCCGCTGGCATCATCTTCATCTTGAAGACAGACCTTGTG 540
Db 161 GlnGlnIleSerGlnAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGTACACATGTAATCTCAAGTGCAGCTTCTGAGATTGCATTCAGGA 600
Db 181 LysSerGlnLeuLeuHISileGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
QY 601 AGAAGGATTCAGAGTTTGAAGCAAAATGCAGTGAACAGCAACCAATCCATGTTGTA 660
Db 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220
QY 661 ATTGAAGACTTGAAGTCCCTCACTTACCCGTTCCGTAACCCCACTTCCAGAGCTCTGTG 720
Db 221 IIGlnAspPheGlnSerSerLeuThrArgSerValProIleuSerGlnAlaSerLeu 240
QY 721 AATATTCCTGTTTACCCCAAAATATTACAGGTACATCTGCAGAGACTCTTGGCCAG 780
Db 241 AsnIleProGlnLeuProProGlnTyThrLeuGlnValHISLeuGlnGlnSerLeuGln 260
QY 781 GAGGAAAGCAAGATATGACTGACTCAGCAGATCCAGTTTTCAGGCAATTTCAAG 840
Db 261 GlnGlnSerGlnValSerValIleSerAlaAspProValPheGlnValProIleSerLys 280
QY 841 GCAGTTCACTTACTACGAATGATGCCATAAAAACACTGTGTGTAGATTTGACATT 900
Db 281 AlaValGlnLeuThrThrAsnAspAlaIleTyThrThrLeuLeuValGlnLeuAspIle 300
QY 901 TCAATATACAGACTTTTCTTATCAGCTCGAGATGCCCTTACGCTGATCTGCCATACAT 960
Db 301 SerAsnThrAspPheSerTyArgIleProGlnLysAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTTCGAGGTACAAAGCCTTACTCCAAAGACTCGAGCTTGAAGTAAAGAGCACTGC 1020
Db 321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnLysArgGlnHISCys 340
QY 1021 GTCTTTTGAATAAAGGAGACACAAAGAAAGAGACTTACCTTACCCAGCATATA 1080
Db 341 ValLeuLeuLysIleLysAlaAspThrLysLysLysLysAlaThrLeuProGlnHISile 360
QY 1081 CTGCGGGAGATGTTCTCTCCAGTTCAATTTTACTCGTGCTTGTGAATCCAGCAATTCCT 1140
Db 361 ProAlaGlnCysSerLeuGlnPheIlePheThrTyCysLeuGlnIleAlaGlnAlaIlePro 380
QY 1141 AAAAAGGCAATTTTGGAGGCCCTTGTGCACTATACAGTACAGTGTGAAAAAGCGCAG 1200
Db 381 LysLysAlaPheLeuAlaLeuValAspTyThrSerAspSerAlaGlnLysArgArg 400
QY 1201 CTACAGAGCTGTGCAAGTAAACAGGGGAGCCGATTAATAGCCGTTTGTACAGATGCC 1260
Db 401 LeuGlnGlnLeuCysSerLysGlnGlnAlaAlaAspTySerArgPheValArgAspAla 420
QY 1261 TGTGCTGCTGTGTGATCTCTCTCTGCTTTCCTTTCCTTCCAGCAGCACTCAGCTC 1320
Db 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerTyGlnProProLeuSerLeu 440
QY 1321 CTGCTGGAACATCTTCCTTAACTTCAACCCAGACCAATATCGTGTGAGCTCAAGTTTA 1380
Db 441 LeuLeuGlnIleHISLeuProLysLeuGlnProArgProTyrIleSerCysAlaSerSerLeu 460
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QY      1381 TTTCACCCAGGAAAGCTTCATTTTGTCTCAACATTTGGAATTTCTGTCTACTGCCACA 1440
      |||
Db      461 PheHisProGlyIyLysLeuHisPheValPheHisnIleValGluPheLeuSerThrAlaThr 480
QY      1441 ACAGAGGTTTCTGCGGAAAGGAGATGTACAGCTGGCTGGCTTTGTTGGTCTTCAGTT 1500
      |||
Db      481 ThrGluValIleuArgLysGlyValIcysThrGlyIyPheuAlaLeuValAlaSerVal 500
QY      1501 CTTCAGGCAACATACATATGCTATCCCATGAAAGACCGGGGAAAGCCCTGGCTCTTAAGTA 1560
      |||
Db      501 LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyValAlaLeuAlaProLysIle 520
QY      1561 TCCATCTCTCCCTCGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
      |||
Db      521 SerIleSerProArgThrThrAsnSerPheHisIleuProAspProSerIleProIle 540
QY      1621 ATAATGTTGGTTCAGAGAACCGGCAATAGCCCGTTTATTTGGTTCTTCAACATAGAGAG 1680
      |||
Db      541 IleMetValGlyProGlyIyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
QY      1681 AAATCCAGAACACACACCCAGATGGAATTTTGGAGCAATGTGTGTTTGGTGGCTGC 1740
      |||
Db      561 LysLeuGlnGluGlnHisProAspGlyAsnDheGlyAlaMetTrpLeuPhePheGlyCys 580
QY      1741 AGGATATAGATAGATGATTTATCTATTCAAGAAAGAGCTCAGACATTTCTTAAGCATGGG 1800
      |||
Db      581 ArgHisLysAspAlaGlyAspTrpLeuPheArgLysGluLeuArgHisPheLeuLysHisGly 600
QY      1801 ATCTTAATCTCATTAAGGTTTCTTCTCAAGAGATGCTCTGTGGGAGAGAGAAAGCC 1860
      |||
Db      601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGlnIleVal 620
QY      1861 CCAGCAAGATGTATCAAGACACATCCAGCTTCTATGGCCAGCGGTGGCCAGAAATCTC 1920
      |||
Db      621 ProAlaLysTrpValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
QY      1921 CTCAGAGGAACGGCCATATTATGTGTGTGAGATGCAAGAAATATGAGCAAGATTA 1980
      |||
Db      641 LeuGlnGlnLeuGlnHisIleTrpValIcysGlyAspAlaLysAsnMetAlaLysAspVal 660
QY      1981 CATGATGCCCTTGTGCAATATATAGCAAGAGGTTGGATTTGAAAACTAGAAAGCAATG 2040
      |||
Db      661 HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGlnAlaMet 680
QY      2041 AAAACCTCGGCCCATTTTAAAGAAAGAAAGGCTTACCTTCAGATATTGGTCA 2094
      |||
Db      681 LysThrLeuAlaThrLeuLysGluGlnLysArgTrpLeuGlnAspIleTrpSer 698

RESULT 4
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens

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US-09-371-347A-42
Alignment Scores:
Pred. No.: 2,02e-66 Length: 698
Score: 3609.00 Matches: 696
Percent Similarity: 99.86% Conservative: 1
Best Local Similarity: 99.71% Mismatches: 1
Query Match: 95.78% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-42 (1-698)
QY      1 ATGAGAGGTTTCTGTACTATATGCTACACAGAGGAGACGCAAGCCATCGCAAA 60
      |||
Db      1 MetArgArgPheLeuLeuLeuTrpAlaThrGlnGlnIyGlnAlaLysAlaIleAlaGlu 20
QY      61 GAAATGTGTAGCAAGCTGTGTACATGATTTTCTGCAATCTTCAATCTTATATAGGAA 120
      |||
Db      21 GluIleCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGlu 40
QY      121 TCCGATATAGATAGACCTTAAACCGAAGACGCTCTTGTGTGTGTGTTTCTACACAG 180
      |||
Db      41 SerAspLysTrpAspLeuLysTrpGlnThrAlaProLeuValAlaValAlaSerThrThr 60
QY      181 GGCACCCGAGACCCACCCGACACAGCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240
      |||
Db      61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluIleGlnAsnGlnThr 80
QY      241 CTGCGGTTGATTTCTTGTCTCACCTGCGGTATGGTTACTGGGTCTCGGTATTCAGAA 300
      |||
Db      81 LeuProValAspPhePheAlaHisLeuArgTrpIleLeuGlnLysLeuGlyAspSerGlu 100
QY      301 TACACCTACTTTTGCATTTGGGGGGAAGATATGATTAAGACTTCAAGAGCTTGGAGCC 360
      |||
Db      101 TyrThrTrpPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlyAla 120
QY      361 CGGATTTCTATGACACTGTGACATGACATGACATCTGTAGATTGAACTTGTGTGAG 420
      |||
Db      121 ArgHisPheTrpAspThrGlnHisAlaAspAspCysValGlyLeuGlnLeuValIleGlu 140
QY      421 CCGTGATTTGCTGACTCTGTGCGCCAGCCCTCAGAAAGATTTTATAGTCAAGAGAGACA 480
      |||
Db      141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSerArgIyGln 160
QY      481 GAGAGATATAGTGGCGGACCTCCGCGTGCATCACCTGCATCTTGAAGAGACAGCTTGTG 540
      |||
Db      161 GluIleLysSerGlyAlaLeuProValAlaSerProAlaSerLeuAspGlnAspLeuVal 180
QY      541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTCGAGCTTCTGAGATTGATATTCAGA 600
      |||
Db      181 LysSerGlnLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
QY      601 AGAAGAGATTTGAGGTTTGAACCAAAATGACATGAAACAGCAACCAATCCAATGTTGTA 660
      |||
Db      201 ArgLysAspSerGluValIleuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
QY      661 ATGGAAGCTTTGAGTCTTCACTTACCCGTTGGTATCCCACTCTCACAAGCCCTCTG 720
      |||
Db      221 IleGlnAspPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY      721 AATATCTGTGTATACCCCGAATATTTACAGATATGACATGACAGAGTCTCTGGCCAG 780
      |||
Db      241 AsnIleProGlyLeuProProGlnTrpLysGlnValHisIleGlnLysLeuGln 260
QY      781 GAGGAAAGCCAAATATCTGTACTTACAGACATCCAGTTTTCAGTGCCAAATTTCAAAG 840
      |||
Db      261 GluIleSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
QY      841 GCAGTTCACTTATACAGATGATGACCAATAAAACCACTGCGGTGATGATTTGGACATT 900
      |||
Db      281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
QY      901 TCAATACAGACTTTCTTATCAGCTGAGATGCTTCAAGCGTGATCTGCCCTTAAGAGT 960

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|||||
Db 301 SerAsnThrAspSerLeuYrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTCTAGAGTCAAAAGCTTACTCCAAAGACTGCAAGCTTGAAAGATTAAGAGACACTGC 1020
Db 321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLeuValArgGlnIleCys 340
QY 1021 GTCCCTTGAATAAAGGAGAGACAAAGAAAGAAAGAGACTTACCTTACCCAGCATATA 1080
Db 341 ValLeuLeuValIleValAspThrLeuValValSerGlnAlaThrLeuProGlnIleIle 360
QY 1081 CTTGCGGAGATGTTCTCCAGATTCTTTTAACTGTGTCTTGAATCCGAGCAATTCCT 1140
Db 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
QY 1141 AAAAGGCAATTTTTCGAGCCCTTGAGACTATACAGTGACAGTGTGTAAGAGCGAG 1200
Db 381 LysValAlaPheLeuArgAlaLeuValAspTrpThrSerAspSerAlaGlnValArgArg 400
QY 1201 CTACAGAGAGCTGTGAGTAAACAAAGGAGCGAGCGGATTAATGCGCTTGTATCGAGATGCC 1260
Db 401 LeuGlnIleLeuCysSerLeuGlnGlnAlaAlaAspTrpSerAlaGpPheValAlaAspAla 420
QY 1261 TGTGCTGCTTGTGATCTCTCTGCTTCCGCTTCCCTTTCGACGACCACTCAGTCTC 1320
Db 421 CysAlaCysLeuLeuAspLeuLeuValAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGGAACATCTCTTAAACTTCACCCAGACCAATTCGTGTGAGTCAAGTCAAGTTTA 1380
Db 441 LeuLeuGlnIleIleLeuProValLeuGlnProArgProTrpSerCysAlaSerSerLeu 460
QY 1381 TTTTCAACCAGGAAGCTCCATTTTGTCTTCAACATTTGTGAAATTTGTCTATCGCCACA 1440
Db 461 PheIleSerProGlyLysLeuIlePheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
QY 1441 ACAGAGTTCTGCGGAAAGGAGATGTATACAGCTGCGCTTGTGTTGTTCTTCAAGTT 1500
Db 481 ThrGlnValLeuArgLysGlnValCysThrGlyTrpLeuAlaLeuValAlaSerVal 500
QY 1501 CTTTCAGCCAAACATACATGCATCCCATGAAAGACGCGGAAAGCCCTGCGCTTCCTAAGATA 1560
Db 501 LeuGlnProAsnIleIleAlaSerHisGlnAspSerGlyLysValAlaLeuAlaProLysIle 520
QY 1561 TCCATCTCTCTCGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Db 521 SerLeuSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
QY 1621 ATAATGTGGGTCCAGAAACCGGATAGCCCGCTTATTTGGGTTCTTACAACTAGAGAG 1680
Db 541 IleMetValGlyProGlnThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGln 560
QY 1681 AAATCCAAAGAAACAACCCAGATGAAATTTTGGAGCAATGTGGTGTGTTTGGGTGC 1740
Db 561 LysLeuGlnGlnGlnIleProAspGlyAsnPheGlyAlaMetTrpLeuPhePheGlyCys 580
QY 1741 AGGCAATAGAGTATGAGTATCTATTTCAGAAAAGAGCTCAGACATTTCTTAAAGCATGGG 1800
Db 581 ArgHisAlaValAspArgAspTrpLeuPheArgLysGlnLeuArgHisPheLeuValHisGly 600
QY 1801 ATCTTAACATCACTTAAAGGTTTCTTCTCAAGAGATGCTCTGTGGGAGAGAGAAAGCC 1860
Db 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGlnGlnAla 620
QY 1861 CCGAGCAAGATATGACAAAGCAACATCCAGCTTCATGGCCAGCGAGTGGGAGAAATCTC 1920
Db 621 ProAlaLysTrpValGlnAspAsnIleGlnLeuHisSerGlnGlnValAlaAlaGlyIleLeu 640
QY 1921 CTCGAGAGAAACGCGCATATTATGTGTGTGAGATGCAAGATATATATGAGATGTA 1980
Db 641 LeuGlnIleValHisGlnIleValCysGlyAspAlaLysAsnMetAlaValAspVal 660
QY 1981 CATGATCCCTTGTGCAATATATAGCAAAAGAGGTGAGTTGAAAACTAAGAACATG 2040
|||||
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Db 661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyValGlnLysLeuGlnAlaMet 680
QY 2041 AAAACCTGGCCCTTTTAAAGAAAGAAACGCTACTTACGATATTTGGTCA 2094
Db 681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnAspIleTrpSer 698

RESULT 5
US-09-371-347A-46
; Sequence 46: Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rama
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.: 3,18e-66 Length: 697
Score: 3598.50 Matches: 696
Percent Similarity: 99.71% Conservative: 0
Best Local Similarity: 99.71% Mismatches: 1
Query Match: 95.50% Indels: 1
DB: 1 Gaps: 1

us-09-371-347A-43 (1-2097) x US-09-371-347A-46 (1-697)
QY 1 ATGAGAGGTTCTGTACTATATGATGATACACAGAGGAGCAAGGATCGCAGAA 60
Db 1 MetArgArgPheLeuLeuLeuTrpAlaThrGlnGlnGlnValAlaValSerThr 20
QY 61 GAAATGTGAGCAAGCTGTGTACATGATTTTCTGCAGATCTTCACTTATTTAGTAA 120
Db 21 GluMetCysGlnGlnAlaValAlaValHisGlyPheSerAlaAspLeuHisCysIleSerGln 40
QY 121 TCCGATATGATATACCTTAAACGAAACGAAAGCTCTTGTGTGTTGGTTTCAACAG 180
Db 41 SerAspLysTrpAspLeuLysTrpGlnThrAlaProLeuValAlaValSerThr 60
QY 181 GGCAGCCGAGAACCCAGCCGACAGAGCCGCAAGTTTGTTAAGAAATACAGAAACA 240
Db 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
QY 241 CTGCGGTTGATTTTCTTGTCTACCTGCGGTATGAGGTTACTGGGTTCCGGTATTCAGAA 300
Db 81 LeuProValAspPhePheAlaHisLeuArgTrpGlyLeuLeuGlnLysLeuGlnAspSerGln 100
QY 301 TACACCTACTTTTGCATATGGGGGAGATATATGATTAAGACTTCAAGAGCTTGGAGCC 360
Db 101 TyrThrTrpPheCysAsnGlnGlyLysIleLeuAspLysArgLeuGlnIleValAla 120
QY 361 CCGCATTTCTATGACACTGAGCATGAGATGATGATCTGTGTAGTTTGAACCTTGTGTTGAG 420
Db 121 ArgHisPheThrAspThrArgLysHisAlaAspAspCysValGlyLeuGlnLeuValValGln 140
QY 421 CCGTGATTTCTGCACTCTGGCCAGCCCTCAGAAAGCATTTTAAAGTCAAGACAGAGCAA 480
|||||
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Db      141 ProTpiLeaIaGlyLeuTrpProAlaLeuArgLyshIspheArgSerArgGlyGln 160
Qy      481 GAGAGTAAGTGGCGGACCTCCGGTGGCATCACCTGATCCTTGAGAGACAGACTTGTG 540
Db      161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuAlaGlnAspLeuVal 180
Qy      541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTCAGCTTGTGAGATTTCAGATTTCAGA 600
Db      181 LysSerCileuLeuLeuHsiIleGlnSerGlnValGileuLeuArgPheAspSerGly 200
Qy      601 AGAAAGATTCGTGAGTTTGAAGCAAAATGCAGTGAACAGCAACCAATCCATGTTGTA 660
Db      201 ArgLysAspSerGluValLeuLysGlnAspAlaValAsnSerAsnGlnSerAspVal 220
Qy      661 ATTGAACACTTGTAGTCTCACTTACCCGTTCCGTTACCCGCTCCTCAAGCCTCTCTG 720
Db      221 IleGlnAspPheGlnSerLeuThrArgSerValProPheLeuSerGlnAlaSerLeu 240
Qy      721 AATATTCGTGGTTTACCCCGAGATATTTACAGGTACATGTGACAGAGTCTTGGCCAG 780
Db      241 AsnIleProGlyLeuProProGlyLysLeuGlnValHisLeuGlnGlnSerLeuGlyGln 260
Qy      781 GAGGAAGCCAAAGTATGTGTACTTCAGCAGATCCAGTTCAGTTCAGTTCAGTTCAG 840
Db      261 GluGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Qy      841 GCAGTTCACTTACTAGGAATGAGCAATAAAACCACTCGCTGCTGAGATTGGACATT 900
Db      281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
Qy      901 TCAAAATCAGACTTTTCTCCTACAGCTGAGAGATCCTTACAGCTGAGTCCCTTAACAGT 960
Db      301 SerAsnThrAspPheSerTyrgInProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      961 GATTCTGAGGTACAAAGCCTTACCTCAAAAGACTGTGAGGTGAAATGAAAGACACTGC 1020
Db      321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlnHisCys 340
Qy      1021 GTCTTTTGAATAAAGGCGACACAAAGAAAGAGAGCTACTTACCCACATATA 1080
Db      341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy      1081 CTTGCGGAGTGTCTTCCAGTTCATTTTCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1140
Db      361 ProAlaGlyCysSerLeuGlnPheIlePheThrTyrcysLeuGlnIleArgAlaIlePro 380
Qy      1141 AAAAAGCATTTTTCGAGCCCTTGTGACTATAACAAGTCAAGTGTGAAAGCCGAGG 1200
Db      381 LysLysAlaPheLeuArgAlaLeuValAspTyrrThrSerAspSerAlaGlnLysArgArg 400
Qy      1201 CTACAGAGCTGTGCACTAAACAAAGGGGCGAGCCGATTAAGCCGCTTGTTCAGAGATGCC 1260
Db      401 LeuGlnGlnLeuLysSerLysGlnGlyAlaAlaAspTyrrSerArgPheValArgAspAla 420
Qy      1261 TGGGCGCTGTTGATCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCT 1320
Db      421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Qy      1321 CTGCTCGAACAATCTTCTTAACCTTCAACCCAGACCATATTTGTGTGCAAGCTCAAGTTTA 1380
Db      441 LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrrSerCysAlaSerSerSerLeu 460
Qy      1381 TTTCACCCAGAGAAAGCTCCATTTTGTCTTCAACATTTGTGGAATTTTGTCTACTGCCACA 1440
Db      461 PheHisProGlyLysLeuHisAspValPheAsnIleValGlnPheLeuSerThrAlaThr 480
Qy      1441 ACAGAGTTCTGGGAAAGGAGTATGTACAGAGCTGGGCTGCTGTTGTTGCTTCAAGT 1500
Db      481 ThrGlnValLeuArgLysGlyValCysThrGlyTyrrLeuAlaLeuLeuValAlaSerVal 500
Qy      1501 CTTGAGCCAAACATACATGATCCATCCATGAGACAGCGGAAAGCCCTGGCTCTTAAGATA 1560
Db      501 LeuGlnProAsnIleHisAlaSerHisGlnLysSerGlyLysAlaLeuAlaProLysIle 520

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Qy      1561 TCCATCTCTCTCGAACCAACAAATTTCTTTCACCTTACAGATGACCCCTCAATCCCATC 1620
Db      521 SerIleSerProAlaGlnThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Qy      1621 ATAATGGTGGGTCCAGAGAACCCGGCATRAGCCCGCTTTATTGGGTTCTCTACAACTAGAGAG 1680
Db      541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGln 560
Qy      1681 AAATCCAAAGAACCAACCCAGATGGAATTTTGGAGCAATGTGGTGTGTTTGGCTGC 1740
Db      561 LysLeuGlnGlnGlnHisSproAspGlyAsnPheGlyAlaMetTrp---PhePheGlyCys 579
Qy      1741 AGGCATAGAGATAGGAGATTATCTATTCAGAAAGAGCTCAGACATTTCTTAAGCATGGG 1800
Db      580 ArgHisLysAspArgAspTyrrLeuPheArgLysGlnLeuArgHisPheLeuLysHisGly 599
Qy      1801 ATCTTAATCATCTAAAGGTTTCTCTCTCTCAAGAGATCCTCTGTTGGGAGAGAGAAACC 1860
Db      600 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGlnLysAla 619
Qy      1861 CCAAGCAAGTATGTACAGACCAACATCCAGCTTCAATGCCAGAGGTGGGAGAAATCCTC 1920
Db      620 ProAlaLysTyrrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 639
Qy      1921 CTCAGAGAGAACGGCCATATTATGTTGTGTGAGAGATCAAAAGATATGAGCAAGATGTA 1980
Db      640 LeuGlnGlnLysGlnHisIleTyrrValCysGlyAspAlaLysAsnMetAlaLysAspVal 659
Qy      1981 CATGATCCCTTGTGTCAATATATATGCAAAAGAGGTGTGAGTTGAAATACTTGAACCAATG 2040
Db      660 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyAlaGlnLysLeuGlnAlaMet 679
Qy      2041 AAAACCTGGCCACTTTAAAGAAAGAAAGCCTACCTTGAGATATTGTGCA 2094
Db      680 LysThrLeuAlaThrLeuLysGlnGlnLysArgTyrrLeuGlnAspIleTrpSer 697

RESULT 6
US-09-371-347A-48
: Sequence 48, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A.
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosendiat, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371.347A
: PRIOR FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 48
: LENGTH: 689
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 8.06e-64 Length: 689
Score: 3470.00 Matches: 686
Percent Similarity: 98.42% Conservative: 1
Best Local Similarity: 98.28% Mismatches: 2
Query Match: 92.09% Indels: 9
DB: 1 Gaps: 6

us-09-371-347a-43 (1-2097) x US-09-371-347A-48 (1-689)

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APPLICANT: Rozen, Rima  
 APPLICANT: Leclerc, Daniel  
 APPLICANT: Wilson, Aaron  
 APPLICANT: Rosenblatt, David  
 TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
 TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUB  
 TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
 FILE REFERENCE: 50004/003003  
 CURRENT APPLICATION NUMBER: US/09/371,347A  
 CURRENT FILING DATE: 1999-08-10  
 PRIOR APPLICATION NUMBER: 09/232,028  
 PRIOR FILING DATE: 1999-01-15  
 PRIOR APPLICATION NUMBER: 60/071,622  
 PRIOR FILING DATE: 1998-01-16  
 NUMBER OF SEQ ID NOS: 61  
 SOFTWARE: FASTSEQ for Windows Version 4.0  
 SEQ ID NO 22  
 LENGTH: 682  
 TYPE: PRT  
 ORGANISM: Caenorhabditis elegans  
 US-09-371-347A-22  
 Alignment Scores:  
 Pred. No.: 4 62e-16 length: 682  
 Score: 912.00 Matches: 226  
 Percent Similarity: 48.30% Conservative: 119  
 Best Local Similarity: 32.11% Mismatches: 288  
 Query Match: 24.20% Indels: 92  
 DB: 1 Gaps: 15  
 us-09-371-347A-43 (1-2097) x US-09-371-347A-22 (1-682)  
 QY 1 ATGAGAGAGTTTCTGTACTATATGTCACAGACAGGAGGAGGCAAGGCCATCGCAGAA 60  
 Db 1 MetThrAapheLeuIleAlaPheGlySerGIInthrGlyGlnAlaGluThrIleAlaIys 20  
 QY 61 GAAATGTGTGACCAAGCTGTGTACATGATTTTCTGCAGATCTTCACTATATTAAGTGA 120  
 Db 21 SerLeuYSGluLysAlaGluLeuIleGlyLeuThrProArgLeuHisAlaLeuAapGlu 40  
 QY 121 TCCGTAAGTATGACCTTAAAAACCGAACAAGCTCCCTGTGTGTGTGTTCTACACG 180  
 Db 41 AenGluLysLysPheAsnLeuAenGluLysLeuCysAlaIleValIleValSerSerThr 60  
 QY 181 GGCACCGGAGCCACCCGACAGCCCGCAAGTTTGTTAAGGAATAACAGAACCAACA 240  
 Db 61 GlnAapGlyAapAlaProAspAsnCySAlaArgPheValAlaArgIleAsnAlaGAsnSer 80  
 QY 241 CTGCCGGTGAATTTCTTGCTCACTCGCGGTATGGTTACTGGGTCTCGGTGATTGAGA 300  
 Db 81 LeuGlnAenGluLysLeuIleAsnLeuAapTyrValLeuLeuGluLysLeuGlyAspSerAen 100  
 QY 301 TACACTACTTTTGGCATGCGGGGAGATTAATGATTAACGACTTCAAGAGCTTGAGGC 360  
 Db 101 TyrSerSerTyrGlnThrIleProArgLysIleAapLysGluLeuThrAlaLeuGlyAla 120  
 QY 361 CGGCATTTCTTACTGACACTGACATGACATGACTGTGTAGAGTTTGAACCTTGCTTGA 420  
 Db 121 AsnAlaGluPheAapAlaArgIleGlnAlaAapAapGlnValGlyLeuGluLeuGluValGlu 140  
 QY 421 CCGTGAGATTGCTGACCTCGGCCAGCCCTTCAGAAAGCATTTTAAAGTCAAGCAGAGACA 480  
 Db 141 ProTyrIleGluLysPhePheAlaThrIleAlaSerArgPheAspIleSerAlaAapLys 160  
 QY 481 GAGAGAGATTAAGTGGGCGACCTCCCGGAGGATCACTCGATCCCTTGAAGACAGACTTGG 540  
 Db 161 MetAen-----AlaIleThrGluSerSerAsnLeuLysLeuAenGlnVal 175  
 QY 541 AAGTEAGAG-----CTGCTACACATTAATCAATCAAGCTTCTGAGATTGCAT 591  
 Db 176 LysThrGluGluGluLysLysAlaLeuLeuGlnLysArgIleGluLysAapGluGluSerAap 195  
 QY 592 GATTACAGAGA----- 603

Db	136	AspGluGlyArgGlyArgValIleIleGlyYIleAspMetLeuIleProGluHisTyrAspTyr	215
Qy	604	AAGGATTCGTGAGTTTTGGAGCAAAATGACGTGAACGACCAACCAATGCATGTGTGAATT	663
Db	216	ProGluIleSerLeuLeuGlySerGlnThrLeuSerAsnAspGluAsnLeu-----	233
Qy	664	GAAGACTTGTAGTCTCACTTACCCGTTCCGTACC-----CCACTTCACAA	711
Db	234	-----ArgValProIleAlaProGlnProPheIleVal	244
Qy	712	GCCTCTCGAATATTCGTGTTTACCCCA-----GAATATTACAGATCAAT	759
Db	245	SerSerValSerAsnArgIlePheProGluAspThrTyrIleGluGlnTyrGlnAsnLeuCys	264
Qy	760	CTGCAGAGAGTCTCTTGCCACAGAGAAAGCCAGATCTGTGACTTCAGCAGATCCAGTT	819
Db	265	LysMetProGlyValValThrIlePheProGluValLeuValValSerAlaGluPheVal	284
Qy	820	TTTCAAGTCCCAATTTCAAGGCGATTCACCTTACTACGAATGATGCCATPAAAACCACT	879
Db	285	ThrAsp--ProPheSerLys-----LysIleLysThrLys	295
Qy	880	CTGCGGTGAGAAATGGACATTTCAAT-----ACAGACTTTTCTGTACGCGCTGAGAT	933
Db	296	ArgMetIleThrValAspPheGlyAspHisAlaIleGluGlnTyrGluProGlyAsp	315
Qy	934	GCCTTCAAGCGTGAATCTGCCCTTACAGATGATTTCTGAGTACAAAGCTTCCAAAGACTG	993
Db	316	AlaIleTyrPheCysValProAsnProAlaLeuIleValAsnPheIleLeuLysArgCys	335
Qy	994	CAGCTTGAGATTAAGAAGAGACACTGGCTCTTTGAAAATAAAGCAGACACAAGAG	1053
Db	336	GlyValLeuAspIleAlaAspGlnGlnCysGluLeuSerIleAsnProLysThrGlnLys	355
Qy	1054	AAAGGAGCTACCTACCCGACGATATATCCGCGGAGATGTTCTCCAGTTCAATTTTACC	1113
Db	356	IleAsnAlaGlnIleProGlyHisValHisLysIleThrThrIleAsnGlnHisMetPheThr	375
Qy	1114	TGGTGTCTTGAATCCGAGCAATTCCTTAAAGGCAATTTTTCGAGCCCTTGTGGACTAT	1173
Db	376	ThrCysIleAsnAspIleAspArgAlaProGlyArgProLeuIleAspValIleAlaGluSer	395
Qy	1174	ACCAGTGACAGTCTGTAAAGCCGACGCTACAGAGCTGTGCAGTAAACAAGGCGACGCC	1233
Db	396	ThrSerAspProAsnGlnLysArgArgLeuLeuLeuLeuLeuLeuSerAlaGlnGlyMetLys	415
Qy	1234	GATTATAGCCCTTTGTATACGAGAGTCCGTGCCCTTGTGATCTTCCTCGCTTTC	1293
Db	416	AspPheThrAspPheValArgThrProGlyLeuSerLeuAlaAspMetLeuPheAlaPhe	435
Qy	1294	CCTTCTTCGACGACACACACTGATGCTCTGCTGCAGCAATCTTCTTAACTTCAACGAGA	1353
Db	436	ProAsnValLysProProValAspArgLeuIleGluLeuLeuProAspGluIleProArg	455
Qy	1354	CCATATTGTGTGACAGCTCAAGTTATTTATTCACCCAGAAAGCTCAATTTTCTTCAAC	1413
Db	456	ProTyrSerMetSerSer-----TyrGlnAsnArgLysAlaArgLeuIleTyrSer	472
Qy	1414	ATTGTGCAATTTCTGTCTACTGACCAACAAGAGTTCTGGGAAGGAGATATGACAGGC	1473
Db	473	GluMetGluPheProAlaThrAspGlyArgArgHisSerArgLysGlyLeuAlaThrAsp	492
Qy	1474	TGGCTGGCGCTTGTGTGTGCTTCAGTTCTTCACGCAAAACATACATGCATCCATGAAGAC	1533
Db	493	TrpLeuAsnSerLeu-----	497
Qy	1534	AGCGGAAAGCCCTGGCTCTAAGATATCCATCTCTCTGCAACAAATTTCTTCCAC	1593
Db	498	-----ArgIleGlyAspLysValGlnValLeuGlnLysGluProAlaArgPheArg	514
Qy	1594	TTACCA-----GATGACCCCTCAATCCCAATCAATTAAGTGGGT	1632





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Qy 1099 CAGTTCATTTTACCTGGTGTCTGAATCCGAGCAATTCCTAAAGGCAATTTTGGGA 1158
Db 368 ArgThrAlaLeuThrTyrTyrLeuAspIleThrAsnProProAlaGlnThrAsnValLeuTyr 387
Qy 1159 GCCCTTGAGCACTATACAGTACGAGTGTGAAAAAGCCAGCTACAGAGCTGTGCAAT 1218
Db 388 GluLeuAlaGlnTyrAlaSerGluProSerGluGlnGluLeuArgLysMetAlaSer 407
Qy 1219 AAACAAGGGGAGCCGAT-----TATAGCCGCTTTGTACAGATGCTGTGCTGCTG 1272
Db 408 SerSerGlyGluGlyLysGluLeuTyrLeuSerTyrValAlaGluAlaArgHisIle 427
Qy 1273 TTGATCTCCCTCGCTCGCTTCCCTCTGACGACACAGCTGCTGCTGCTGCAACAT 1332
Db 428 LeuAlaIleLeuGlnAspCysProSerLeuArgProPoiIleAspHisLeuCysGluLeu 447
Qy 1333 CTTCCTAACTTCAACCCAGACATATTCGTGTCAACTCAAGTTTATTTTACCCAGGA 1392
Db 448 LeuProArgLeuGlnAlaArgTyrTyrSerIleAlaSerSerLysValHisProAsn 467
Qy 1393 AAGCTCCATTTTGTCTTCAATGTGCAATTTCTGTCTACTGCCACAAGAGGTTCTG 1452
Db 468 SerValHisIleCysAlaValAlaValGluTyrGluThrLysAlaGlyArg-----Ile 485
Qy 1453 CGGAAGGAGATGATGACAGCTGGCTGGCTGTGCTGCTGCTGCTGCTGCTGCTGCTG 1512
Db 486 AsnLysGlyValAlaThrAsnTrpLeu-----ArgAlaLysGluPro--- 499
Qy 1513 ATACATGATCCATCCATGAGACAGCGGAAACCCCTGCTCTTAAGATATCCATCTCTCT 1572
Db 500 -----ValGlyGluAsnGlyGlyArgAlaLeuValProMetPheVal----- 513
Qy 1573 CGAACAACAATTTCTTTCACCTTACCCAGATGACCCCTCAATCCCATATATATGTTG 1632
Db 514 ---ArgLysSerGlnPheArgLeuProPheLysAlaThrThrProValIleMetValGly 532
Qy 1633 CCAGAAACCCGAGATAGCCGCTTATTTGGGTTCTTACACATAGAGAAATCCCAAGAA 1692
Db 533 ProGlnThrGlyValAlaProPheIleGlyPheIleGlnGluAlaTrpLeuArgGln 552
Qy 1693 CAACACCAGATGAAATTTTGAGCAATGTGTGTTTGTGCTGAGCATTAAGAT 1752
Db 553 GlnGlyLysGlu-----ValGlyGluThrLeuLeuTyrTyrGlyCysArgArgSerAsp 570
Qy 1753 AGGATATTTCTATTCAGAAAAAGCTCAGACATTTCTTAAGATGGATTTAACTCAT 1812
Db 571 GluAspTyrLeuTyrArgGluGluLeuAlaGlnPheHisArgAspGlyAlaLeuThrGln 590
Qy 1813 CTAAAGTTTCTCTCAAGAGATGCTCTCTGTGGGAGGAGAAAGCCCAAGATAT 1872
Db 591 LeuAsnValAlaPheSerArg-----GluGlnSerHisLysValTyr 604
Qy 1873 GTACAAGACAACATCCATTCATGAGCAGGTGGGCAAGATCTCTCCAGAGAAC 1932
Db 605 ValGlnHisLeuLeuLysGlnAspArgLinhIleLeuTrpLys---LeuIleGlnGly 623
Qy 1933 GGCATATTTATGTGTGTGAGATGCAAGAAATATGCGCAAGATGATGATGCTT 1992
Db 624 AlaHisIleTyrValCysGlyAspAlaArgAsnMetAlaArgAspValGlnAsnThrPhe 643
Qy 1993 GTGCAATTAATACCAAGAGCTTGAGCTGAGTAAAAAAGTACAGAAAGTAAACCTG 2052
Db 644 TyrAspIleValAlaGluLeuGlyAlaMetGlnHisAlaGlnAlaValAspTyrIleLys 663
Qy 2053 ACTTTAAAGAAAGAAACGCTACCTTCAGAGTATTTGGTCA 2094
Db 664 LysLeuMetThrLysGlyArgTyrSerLeuAspValTrpSer 677

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RESULT 9  
 US-09-371-347A-60  
 ; Sequence 60, Application US/09371347A  
 ; GENERAL INFORMATION:

```

; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-54

Alignment Scores:
Pred. No.: 0.0556 Length: 41
Score: 215.00 Matches: 41
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 5.71% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-60 (1-41)

Qy 1858 GCCCAGCAAGATGTGACAGACACATCCAGTTTACGCGCAGTGGCAGATC 1917
Db 1 AlaProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIle 20

Qy 1918 CTCCTCAGAGAAACGCGCATATTTATGTGTGAGATGCAAGATATAGCCAGAT 1977
Db 21 LeuLeuGlnGluAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAsp 40

Qy 1978 GTA 1980
Db 41 Val 41

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-54

Alignment Scores:

```

```
Pred. No.: 0.873 Length: 29
Score: 158.00 Matches: 29
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 4.19% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-43 (1-2097) x US-09-371-347A-54 (1-29)
QY 259 GCTACCTGCGGTATGGGTTACTGGGTCCTCGGTATTCAGAAATACACTTCTTGGCAAT 318
Db 1 AAlaHisLeuArgTyrGlyLeuGlyAspSerGlyThrTyrPheCysAsn 20
QY 319 GGGGGAAGATATATGATTAACGACTT 345
Db 21 GlyGlyHisLeuLeuAspLysArgLeu 29
RESULT 11
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58
Alignment Scores:
Pred. No.: 6.41 Length: 22
Score: 117.00 Matches: 22
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 3.11% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-43 (1-2097) x US-09-371-347A-58 (1-22)
QY 1612 ATCCCATCATATATGTTGGTCCAGAACCGCATAGCCCGTTATGGGTTCTTCAAA 1671
Db 1 lIleProIleIleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGln 20
QY 1672 CATAGA 1677
Db 21 HisArg 22
RESULT 12
US-09-371-347A-53
; Sequence 53, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
```

```
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; LENGTH: 23
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-53
Alignment Scores:
Pred. No.: 6.43 Length: 23
Score: 116.00 Matches: 23
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 3.08% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-43 (1-2097) x US-09-371-347A-53 (1-23)
QY 160 GTTGTGTGGTTTCTACAGGGAGACCGACCGACAGCCGCGCATGTTGTT 219
Db 1 ValValAlaValSerThrThrGlyThrGlyAspProAspThrAlaArgLysPheVal 20
QY 220 AAGGAATA 228
Db 21 LysGluIle 23
RESULT 13
US-09-371-347A-25
; Sequence 25, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-25
Alignment Scores:
Pred. No.: 10.7 Length: 18
Score: 109.00 Matches: 18
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 2.89% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-43 (1-2097) x US-09-371-347A-25 (1-18)
QY 1714 GGAGCAATGTGTTGTTTGGCTGCGGCAATAGAGATGATTTCTATTTC 1767
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Db      1  G1yIawetTtPleuPhEheG1jCySaRrgh1sLysAsPaAgaPTyLeuPhE 18

RESULT 14
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.:          12.6           Length:         19
Score:              104.00          Matches:         19
Percent Similarity: 100.00%        Conservative:    0
Best local Similarity: 100.00%     Mismatches:     0
Query Match:        2.76%          Indels:          0
DB:                  1             Gaps:            0

us-09-371-347a-43 (1-2097) x us-09-371-347A-55 (1-19)

Qy      1342 CTTCACCCAGCACCATATTCTGTGCAGACTCAAGTTATTTTCACCAGAAAGCTC 1398
Db      1 LeuGlnProAlaGProTyISeCYahIsErSerLeuPhEh1sProGlYylsLeu 19

RESULT 15
US-09-371-347A-52
; Sequence 52, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 52
; LENGTH: 20
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:          14.3           Length:         20
Score:              100.00          Matches:         20

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Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Matchn: 2.65% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-52 (1-20)

QY 10 TTTCTGTACTATATTCGTACACAGCAGGACCAAGGCCATCCGAGAAATGCT 69
DB 1 PheuleuLeuTyraIaThrGlnGlnGlnGlnGlnAlaIaIaSerVal 20

RESULT 16
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. No.: 28.4 Length: 17
Score: 87.00 Matches: 17
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 2.31% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-57 (1-17)

QY 1450 CTCGCGAAGGAGATATGTATGACAGCTGCGCTGTGTGGTCTTCACTT 1500
DB 1 LeuArgIysGlyValCysThrGlnGlyTTrpLeuAlaIaIaSerVal 17

RESULT 17
US-09-371-347A-56
; Sequence 56, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0

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; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56

Alignment Scores:
  Pred. No.:      72.7      Length:      14
  Score:          68.00     Matches:      14
  Percent Similarity: 100.00%  Conservative: 0
  Best Local Similarity: 100.00%  Mismatches: 0
  Query Match:      1.80%     Indels:      0
  DB:                1        Gaps:        0

US-09-371-347A-43 (1-2097) x US-09-371-347A-56 (1-14)

OY      1402 TTGTCTTCAACATTGTGGAATTTCTGTACTGCGCACACA 1443
Db      1 PheValPheAsnIleValGluPheLeuSerThrIleAlaThrThr 14

RESULT 18
US-09-371-347A-22
; Sequence 22, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRT
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
  Pred. No.:      2.62      Length:      682
  Score:          64.50     Matches:      113
  Percent Similarity: 33.46%  Conservative: 62
  Best Local Similarity: 21.61%  Mismatches: 174
  Query Match:      1.73%     Indels:      175
  DB:                1        Gaps:        29

US-09-371-347A-43 (1-2097) x US-09-371-347A-22 (1-682)

OY      1353 TCTGGGTGAAGTTAGTAGAGATG---TTGAGCAGAGAGACTGAGTGGCTGGCAAGA 1297
Db      168 SerSrnLeuIlySleuAnGlnValIlyThrIuGluIuIySAlaLeuIleuGlnIlys 187

OY      1296 AGGGAAGCAGAGAGATCCAAACAAGCAGCAGCAGCTCTGTACAAAGCGGCTATA 1237
Db      188 ArgIleGluAspIuAspIuSerAspAspIuGluIyArgIly-----ArgVal 202

OY      1236 ATCGGCTGCCCTTTGTTACTGCGACAGCTCTGTAGCTCGGCTTTTCAGACACTGTACT 1177
Db      203 IleIlyIly-----IleAspMetLeuIleProGluHisIlyrAspIlyrProGlu 217

OY      1176 GGTAATGTCACAGAGGCTGCAAAATAGCCTTTTAGGAATGCTCGAATTCAGACA 1117
Db      218 IleSerLeuLeuIlySylSerGln-----Thr 226

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OY      1116 CCAAGTAAATGAATGAGAGAGACATCCCGAGATATAGTGGGTAAAGTAGCTCC 1057
Db      227 LeuSerSrnIlySleuAnGlnValIlyThrIuGluIuIySAlaLeuIleuGlnIlys 187

OY      1056 TTCTCTTGTGTGTCTGCTTTATTTTCAAAAGCAGAGCTCTCTTTATCTTCAAG 997
Db      239 OGlnProPheIleValSerSerValSerAsnArg-----LysLeuProGluAspThr 256

OY      996 CTGAGCTTTGGAGTAGGCTTTGTACTCGAATCATCTGTGGCAGATCCGCTGAA 937
Db      256 LysLeuGluIlyrIuAsnLeuIyS-----LysMetProGluValIlyThr----- 271

OY      936 GGCATCTCCAGGCTGATAGGAAAAAGTCTGATTGTAATGCCAATTCACAGCAGAT 877
Db      272 -----LysProPheGluVal-----Le 277

OY      876 GGTATTATGACATCATTCGTAAGTTAAGTAACTGCTTTGAAATGGCACTGAAAAC 817
Db      277 uValValSerAlaGluPheValThrAspProPheSerLysIleLysThrIlySArgMe 297

OY      816 TGGATCTGCGAAGTACAGAT-----ACTGCGCTTCCCTCCGCGCAGAGACTCC-- 765
Db      297 tIleThrValAspPheGluAspHisAlaAlaGluLeuGlnIlyrGluProGluSAlaI 317

OY      764 -----TGC-----AGATGTAACCTG 751
Db      317 eIlyrPheCylValProAsnProAlaLeuGluValAsnPheIleuIlySArgS----- 335

OY      750 TAAATATTCTGGGGGTAAACACAGATATTTCAGACGCTTGAG-----ACTGG 700
Db      336 -----GlyValLeuAspIleAlaAspGlnGlnCylGluLeuSerIleAsnPr 351

OY      699 GCGTACCAACGGGTAGTAGAGAGCTCAAGCTCT-----TCAATTCAACATGGA 649
Db      351 oIySThrGluIlySleuAnGlnIleProGluHisValHisIlyIleThrIleuAr 371

OY      648 TTGTTGCTGTCTGACTGATTTGCTTCAAACTCAGAACTCTTCTTCTGAAATATC 589
Db      371 gHisMetPheThrThrycLeuAspIleArgAlaIaProGly---ArgProLeuIleAr 390

OY      588 GAATCTCAGAGCTCCAGCTTGAGAT-----TCAATGTGTAG 553
Db      390 gValIleuAlaGluSerThrSerAspProAsnGluIySArgArgLeuLeuIleuIySse 410

OY      552 CAGC-----TCTGACTCACAAGGCTGTGCTCCTCAAGATGAGAGGTGA 511
Db      410 rAlaGlnGlyMetIlyAspPheThrAspPheValArgThrProGlyLeuSerIleuAlaAs 430

OY      510 TGGCACCAGGAGTGGCGCACTTATCTCTCTGTCTGCTTGC-----CTAAATG 457
Db      430 pMetLeuPheAlaPheProAsnValIyS-----ProProValAspArgLeuIleGlu 448

OY      456 CTCTTGAGGGCTGGCGAGAGTCCAGATTCACAGGCTCAACCAAGTTTAACCTAC 397
Db      448 uLeuProArgLeuIleProArgProIlyrSerMetSerSerIyrcIuAsnArgIyS----- 466

OY      396 ACAGTATCTGCATGTCACAGTGCATGTAAGAAATCCCGGCTCCAAAGCTTGAAGTGT 337
Db      467 -----AlaArgIle 469

OY      336 ATCAATATCTCCCGCATTCGAAAGTAGGTATTCGAATCAACCGACCCAGTAA 277
Db      469 u-----IleIySerGluMetGluPheProAlaTh 479

OY      276 CCATACCGCAGGTAGAGAAATCAACCGCAGCTTTGTTCTGTATTCCTTAAC 217
Db      479 rAspGlyArgArgHisSerArgIySglIleuAlaThrAspTrp-----LeuAs 495

OY      216 AAATTCGCG-----GCTGTGTCGGGTGCTCCGGTG----- 183
Db      495 nSerIleuArgIleGluAspIySValGlnValIleuGlyIySgluProAlaArgPheArgIle 515

OY      182 -----CCCGTGTAGAAACCAACAACACAGAGA----- 153

```

```
Db 515 uProleucllymethrlysaenseralglylsyLeuProleuLeuMetValGlyPr 535
      |||::: |||
      |||::: |||
Qy 152 -----GCTGTTGGTGTTCCTGCTGAGCATAGATATCTATTC 126
      |||::: |||
      |||::: |||
Db 535 oglythrcllyalserValpneLeuSerPheLeuHispheLeuArglyLeuLysGlnas 555
      |||::: |||
      |||::: |||
Qy 125 -----TCGGA-TCACATAATATAGTGAAGATC-----TCGAGAAATCC-- 88
      |||::: |||
      |||::: |||
Db 555 pSerProSerAspPheValAspValProArgValLeuPheGlyCysArgAspSerSe 575
      |||::: |||
      |||::: |||
Qy 87 -----ATGTACACAGCTTGCTGACACATTTCTTCGCGATGCTTGGCTGTC 38
      |||::: |||
      |||::: |||
Db 575 rValAspAlaIleTyrrMetSerGluLeuGluMetPheValSerGluGlyIleLeuThrAs 595
      |||::: |||
      |||::: |||
Qy 37 CTGCTGCTG 31
      |||:::
      |||:::
Db 595 pleuile 597

RESULT 19
US-09-371-347A-34
; Sequence 34, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-34

Alignment Scores:
Pred. No.: 76.3 Length: 18
Score: 61.00 Matches: 10
Percent Similarity: 72.22% Conservative: 3
Best Local Similarity: 55.56% Mismatches: 5
Query Match: 1.62% Indels: 0
Gaps: 0

us-09-371-347A-43 (1-2097) x US-09-371-347A-34 (1-18)
Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCGAGCATAGATATCTATTC 1767
      |||::: |||
      |||::: |||
Db 1 GlyArgMetThrLeuValPheGlyCysArgHisProGluGluAspHisLeuTyr 18
      |||::: |||
      |||::: |||

RESULT 20
US-09-371-347A-35
; Sequence 35, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
```

```
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 35
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Gallus gallus
US-09-371-347A-35

Alignment Scores:
Pred. No.: 76.3 Length: 18
Score: 61.00 Matches: 10
Percent Similarity: 72.22% Conservative: 3
Best Local Similarity: 55.56% Mismatches: 5
Query Match: 1.62% Indels: 0
Gaps: 0

us-09-371-347A-43 (1-2097) x US-09-371-347A-35 (1-18)
Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCGAGCATAGATATCTATTC 1767
      |||::: |||
      |||::: |||
Db 1 GlyAspMetIleLeuLeuPheGlyCysArgHisProAspMetAspHisIleTyr 18
      |||::: |||
      |||::: |||

RESULT 21
US-09-371-347A-26
; Sequence 26, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 26
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-26

Alignment Scores:
Pred. No.: 85.4 Length: 18
Score: 58.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.54% Indels: 0
Gaps: 0

us-09-371-347A-43 (1-2097) x US-09-371-347A-26 (1-18)
Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCGAGCATAGATATCTATTC 1767
      |||::: |||
      |||::: |||
Db 1 GlyGluThrLeuLeuTyrTyrrGlyCysArgHisProGluAspGluAspTyrrLeuTyr 18
      |||::: |||
      |||::: |||

RESULT 22
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:
```

```

; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30
```

```

Alignment Scores:
Pred. No.: 85.4      Length: 18
Score: 58.00      Matches: 10
Percent Similarity: 66.67%      Conservative: 2
Best Local Similarity: 55.56%      Mismatches: 6
Query Match: 1.54%      Indels: 0
DB: 1      Gaps: 0
```

us-09-371-347a-43 (1-2097) x US-09-371-347A-30 (1-18)

```
OY      1714 GGAGCAATGTGTTGTTTGGCTGCAGCATAGAGTATGATTC 1767
Db      1 GtYpRthrvallLeuphepneGlyCysArgpYserasppluaspheLeuYr 18
```

```

RESULT 23
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiocapsa roseopersicina
US-09-371-347A-38
```

```

Alignment Scores:
Pred. No.: 88.7      Length: 18
Score: 57.00      Matches: 10
Percent Similarity: 66.67%      Conservative: 2
Best Local Similarity: 55.56%      Mismatches: 6
Query Match: 1.51%      Indels: 0
DB: 1      Gaps: 0
```

us-09-371-347a-43 (1-2097) x US-09-371-347A-38 (1-18)

```
OY      1714 GGAGCAATGTGTTGTTTGGCTGCAGCATAGAGTATGATTC 1767
Db      1 GtYpRthrvallLeuphepneGlyCysArgpYserasppluaspheLeuYr 18
```

```

RESULT 24
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32
```

```

Alignment Scores:
Pred. No.: 95.5      Length: 18
Score: 55.00      Matches: 9
Percent Similarity: 66.67%      Conservative: 3
Best Local Similarity: 50.00%      Mismatches: 6
Query Match: 1.46%      Indels: 0
DB: 1      Gaps: 0
```

us-09-371-347a-43 (1-2097) x US-09-371-347A-32 (1-18)

```
OY      1714 GGAGCAATGTGTTGTTTGGCTGCAGCATAGAGTATGATTC 1767
Db      1 GtYpRthrvallLeuphepneGlyCysArgpYserasppluaspheLeuYr 18
```

```

RESULT 25
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29
```

```

Alignment Scores:
Pred. No.: 99 Length: 18
Score: 54.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.43% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-29 (1-18)

QY 1714 GGAGCAATGCTGTTGCTGCTGAGCATAGATAGGATATATCTATTC 1767
Db 1 GlyylserileLeuTy-rPheGlyAsnArgLysaGsrGluAspTyr 18

RESULT 26
US-09-371-347A-28
; Sequence 28, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371, 347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232, 028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071, 622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Drosophila melanogaster
US-09-371-347A-28

Alignment Scores:
Pred. No.: 103 Length: 18
Score: 53.00 Matches: 8
Percent Similarity: 66.67% Conservative: 4
Best Local Similarity: 44.44% Mismatches: 6
Query Match: 1.41% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-28 (1-18)

QY 1714 GGAGCAATGCTGTTGCTGCTGAGCATAGATAGGATATATCTATTC 1767
Db 1 GlyluserileLeuTy-rPheGlyAsnArgLysaGsrGluAspTyr 18

RESULT 27
US-09-371-347A-61
; Sequence 61, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371, 347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232, 028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071, 622

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```

; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 61
; LENGTH: 9
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-61

Alignment Scores:
Pred. No.: 721 Length: 9
Score: 51.00 Matches: 9
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-61 (1-9)

QY 2068 AAAGCTACCTTGAGATATTTGGTCA 2094
Db 1 LysArgTyrLeuGlnAspIleTyrSer 9

RESULT 28
US-09-371-347A-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371, 347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232, 028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071, 622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347A-36

Alignment Scores:
Pred. No.: 110 Length: 18
Score: 51.00 Matches: 9
Percent Similarity: 61.11% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 7
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-36 (1-18)

QY 1714 GGAGCAATGCTGTTGCTGCTGAGCATAGATAGGATATATCTATTC 1767
Db 1 GlyLysAsnTrpLeuPhePheGlyAsnProHisPheThrGluAspPheLeuTyr 18

RESULT 29
US-09-371-347A-37
; Sequence 37, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David

```

```

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 37
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Saccharomyces cerevisiae
US-09-371-347A-37

Alignment Scores:
Pred. No.: 110 Length: 18
Score: 51.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.35% Indels: 0
Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-37 (1-18)
Qy 1714 GGACAGATGCGTGTCTTTGGCGTGAAGATAGATAGATATATCTTC 1767
Db 1 GtGluValPheLeuTyLeuGlySerArgHisLysArgGluGlyLeuTy 18

RESULT 30
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 4.26 Length: 689
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
Gaps: 2

us-09-371-347a-43 (1-2097) x US-09-371-347A-48 (1-689)
Qy 1894 GAAGCTGAGATGTTGCTTGTACATACTTGTGCGGGCTCTCTCCCAACAGAGCAT 1835
Db 418 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 437
```

```

Qy 1834 CTCTTGAGAGAAACCTTAGATAGATTAGATCCCATCTTAAGGAAATGCTGAGCT 1775
Db 438 SerLeuLeuLeuGlnHisLeuProLysLeuL----- 448
Qy 1774 CTTTTGATATAGATTAATCCCTATCCCTATGCTGACGCCAAAACACCA--CATTC 1717
Db 449 -----ProArgProTySerCysAlaSerSerLeuPheHisPro 462
Qy 1716 TCCAAATTTCCATCTGGGTTGTTGTTCTTGAGATTCTCTCT--ATGTTGAGAACCC 1660
Db 463 GlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThrGluVal 482
Qy 1659 AATAACGGGGCTATGCCGGTCTCTCG 1633
Db 483 LeuArgLysGlyValCysThrGlyTyr 491

RESULT 31
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.: 4.22 Length: 697
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
Gaps: 2

us-09-371-347a-43 (1-2097) x US-09-371-347A-46 (1-697)
Qy 1894 GAAGCTGAGATGTTGCTTGTACATACTTGTGCGGGCTCTCTCCCAACAGAGCAT 1835
Db 419 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
Qy 1834 CTCTTGAGAGAAACCTTAGATAGATTAGATCCCATCTTAAGGAAATGCTGAGCT 1775
Db 439 SerLeuLeuLeuGlnHisLeuProLysLeuL----- 449
Qy 1774 CTTTTGATATAGATTAATCCCTATCCCTATGCTGACGCCAAAACACCA--CATTC 1717
Db 450 -----ProArgProTySerCysAlaSerSerLeuPheHisPro 463
Qy 1716 TCCAAATTTCCATCTGGGTTGTTGTTCTTGAGATTCTCTCT--ATGTTGAGAACCC 1660
Db 464 GlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThrGluVal 483
Qy 1659 AATAACGGGGCTATGCCGGTCTCTCG 1633
Db 484 LeuArgLysGlyValCysThrGlyTyr 492
```



```
RESULT 32
US-09-371-347A-2
; Sequence 2, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 2
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-2

Alignment Scores:
Pred. No.: 4.21 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

US-09-371-347A-43 (1-2097) x US-09-371-347A-2 (1-698)
QY 1894 GAAGCTGATGTTGTTGATACATCTTGTGCGGGCTTCTCTCCCAACAGAGCAT 1835
Db 419 AspalAcysalAcysleuLeuAspleuLeuAlaPheProSerCysGlnProleu 438
QY 1834 CTCTTGAGAGGAACCTTATGATGATGATGATGATGATGATGATGATGATGATGAT 1775
Db 439 SerleuLeuLeuGlnHisleuProlyleuGln----- 449
QY 1774 CTCTTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGAT 1717
Db 450 -----ProArgProTyrSerCysAlaSerSerleuPheHisPro 463
QY 1716 TCCAAAATTTCATCTGCGGTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTT 1660
Db 464 GlysleuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThrThrgluVal 483
QY 1659 AATAACGGGGCTATGCCGGTTCCTGG 1633
Db 484 LeuArgGlyGlyValCysThrGlyTyr 492

RESULT 33
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
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; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1999-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 4.21 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

US-09-371-347A-43 (1-2097) x US-09-371-347A-21 (1-698)
QY 1894 GAAGCTGATGTTGTTGATACATCTTGTGCGGGCTTCTCTCCCAACAGAGCAT 1835
Db 419 AspalAcysalAcysleuLeuAspleuLeuAlaPheProSerCysGlnProleu 438
QY 1834 CTCTTGAGAGGAACCTTATGATGATGATGATGATGATGATGATGATGATGATGATGAT 1775
Db 439 SerleuLeuLeuGlnHisleuProlyleuGln----- 449
QY 1774 CTCTTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGAT 1717
Db 450 -----ProArgProTyrSerCysAlaSerSerleuPheHisPro 463
QY 1716 TCCAAAATTTCATCTGCGGTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTT 1660
Db 464 GlysleuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThrThrgluVal 483
QY 1659 AATAACGGGGCTATGCCGGTTCCTGG 1633
Db 484 LeuArgGlyGlyValCysThrGlyTyr 492

RESULT 34
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1999-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-42

Alignment Scores:
Pred. No.: 4.21 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
```

Query Match: 1.34% Indels: 17  
DB: 1 Gaps: 2  
us-09-371-347a-43 (1-2097) x US-09-371-347a-42 (1-698)  
QY 1894 GAAGCTGGAGTCTCTTGTACATACCTTGTGGGGCTTCTCTCTCCCAACAGAGCAT 1835  
DB 419 AsplalacysalacysleuLeuAspleuLeuLeuAlaPheProSerCysGlnProleu 438  
QY 1834 CTCTTGAGAGGAAACCTTTAGATGAGTTAAGATCCATGCTTAAGAAATGTCTGAGCT 1775  
DB 439 SerleuLeuLeuGlnHstleuProlysleuGln----- 449  
QY 1774 CTTTTCGATAGATATATCCCTATGCTTATGCTGAGCCCAAAACACACA---CATTGC 1717  
DB 450 -----ProArgProTyrSerCysAlaSerSerleuPheHisPro 463  
QY 1716 TCCAAATTTCCATCTGGGTGTCTTGTGAGATTCTCTCT--ATGTTGTAGAACCC 1660  
DB 464 GlylysleuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThrThrGluVal 483  
QY 1659 AATAACGGGGCTATGCCGGTCTCG 1633  
DB 484 LeuArglysglyValCysThrGlyTyr 492  
RESULT 35  
US-09-371-347a-44  
Sequence 44, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A,  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 44  
LENGTH: 698  
TYPE: PRT  
ORGANISM: Homo sapiens  
US-09-371-347a-44  
Alignment Scores:  
Pred. No.: 4.21 Length: 698  
Score: 50.00 Matches: 23  
Percent Similarity: 39.33% Conservative: 12  
Best Local Similarity: 25.84% Mismatches: 38  
Query Match: 1.34% Indels: 17  
DB: 1 Gaps: 2  
us-09-371-347a-43 (1-2097) x US-09-371-347a-44 (1-698)  
QY 1894 GAAGCTGGAGTCTCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1835  
DB 419 AsplalacysalacysleuLeuAspleuLeuLeuAlaPheProSerCysGlnProleu 438  
QY 1834 CTCTTGAGAGGAAACCTTTAGATGAGTTAAGATCCATGCTTAAGAAATGTCTGAGCT 1775  
DB 439 SerleuLeuLeuGlnHstleuProlysleuGln----- 449  
QY 1774 CTTTTCGATAGATATATCCCTATGCTTATGCTGAGCCCAAAACACACA---CATTGC 1717  
DB 450 -----ProArgProTyrSerCysAlaSerSerleuPheHisPro 463

QY 1716 TCCAAATTTCCATCTGGGTGTCTTGTGAGATTCTCTCT--ATGTTGTAGAACCC 1660  
DB 464 GlylysleuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThrThrGluVal 483  
QY 1659 AATAACGGGGCTATGCCGGTCTCG 1633  
DB 484 LeuArglysglyValCysThrGlyTyr 492  
RESULT 36  
US-09-371-347a-27  
Sequence 27, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A,  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 27  
LENGTH: 18  
TYPE: PRT  
ORGANISM: Oryctolagus cuniculus  
US-09-371-347a-27  
Alignment Scores:  
Pred. No.: 118 Length: 18  
Score: 49.00 Matches: 8  
Percent Similarity: 61.11% Conservative: 3  
Best Local Similarity: 44.44% Mismatches: 7  
Query Match: 1.30% Indels: 0  
DB: 1 Gaps: 0  
us-09-371-347a-43 (1-2097) x US-09-371-347a-27 (1-18)  
QY 1714 GAAGCAATGTGTTGTTTGTGCTGAGGCATAGAGATAGGATATATCTATTC 1767  
DB 1 GlyGlnThrleuLeuTyrTyrGlyCysArgAlaAlaGlnAspTyrleuTyr 18  
RESULT 37  
US-09-371-347a-23  
Sequence 23, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A,  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 23  
LENGTH: 677

```

; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-23

Alignment Scores:
Pred. No.: 4.47 Length: 677
Score: 49.00 Matches: 20
Percent Similarity: 45.12% Conservative: 17
Best Local Similarity: 24.39% Mismatches: 27
Query Match: 1.31% Indels: 18
DB: 1 Gaps: 4

us-09-371-347a-43 (1-2097) x US-09-371-347A-23 (1-677)
QY 695 ACCGACGGGTAATGAGATCGAAGCTTCAATTCACATTCGATGCTGCTGTC 636
DB 13 SerGluValAlaAlaGluGlu---ValSerLeuPheSerMetThrAspMetIleLeuPhe 31
QY 635 ACTGCA-----TTTTCCTTCAAACTCGAATCTTCTCTT 600
DB 32 SerLeuIleValGlyLeuLeuThrTyrTrpPheLeuPheArgGlySlySlyGluGluVal 51
QY 599 CCTGAATCATCGAATCTCAGAGCTCGACTGAGATTCAATGTTAGACGCTGACTTC 540
DB 52 ProGluPheThrIlySileGlnThrLeuThr-----SerSerValArgGluSerSerPhe 69
QY 539 ACA-----AGCTCTCTCTCAAGATGCGAGGTGATGCCACCGCG 501
DB 70 ValGluIlySweIlySlyThrGlyArgAsnIleIleValPheTyrGlySerGlnThrIly 89
QY 500 AGTGC 495
DB 90 ThrAla 91

RESULT 38
US-09-371-347A-33
; Sequence 33, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 33
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-33

Alignment Scores:
Pred. No.: 150 Length: 18
Score: 42.00 Matches: 8
Percent Similarity: 62.50% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.11% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-33 (1-18)
QY 1720 ATGTGTTGTTTGGCTGCGAGCATTAAGATTAATTCATATTC 1767
DB 3 MetValLeuValPheGlyCysArgGlnSerIlySileAspHisIleTyr 18

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DB 3 MetThrLeuValPheGlyCysArgCysSerGlnLeuAspHisLeuTyr 18

RESULT 39
US-09-371-347A-31
; Sequence 31, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 31
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-31

Alignment Scores:
Pred. No.: 160 Length: 18
Score: 40.00 Matches: 7
Percent Similarity: 62.50% Conservative: 3
Best Local Similarity: 43.75% Mismatches: 6
Query Match: 1.06% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-31 (1-18)
QY 1720 ATGTGTTGTTTGGCTGCGAGCATTAAGATTAATTCATATTC 1767
DB 3 MetValLeuValPheGlyCysArgGlnSerIlySileAspHisIleTyr 18

RESULT 40
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.: 180 Length: 19
Score: 34.50 Matches: 7

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Percent Similarity: 50.00% Conservative: 3  
 Best Local Similarity: 35.00% Mismatches: 5  
 Query Match: 0.92% Indels: 5  
 DB: 1 Gaps: 1

us-09-371-347a-43 (1-2097) x US-09-371-347a-55 (1-19)

QY 1756 CCTATCTTATGCTGACGCAAAAACACCAATGCTCCAAAATTTCATCTGGGT 1697  
 Db 3 ProargProtYrserCysAlaSerSerleu-----PheHisProGly 17

RESULT 41  
 US-09-371-347a-39

; Sequence 39, Application US/09371347A  
 ; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A,  
 ; APPLICANT: Rozen, Rima  
 ; APPLICANT: Leclerc, Daniel  
 ; APPLICANT: Wilson, Aaron  
 ; APPLICANT: Rosenblatt, David  
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
 ; FILE REFERENCE: 50004/003003  
 ; CURRENT FILING DATE: 1999-08-10  
 ; PRIOR APPLICATION NUMBER: 09/232,028  
 ; PRIOR FILING DATE: 1999-01-15  
 ; PRIOR APPLICATION NUMBER: 60/071,622  
 ; PRIOR FILING DATE: 1998-01-16  
 ; NUMBER OF SEQ ID NOS: 61  
 ; SOFTWARE: FastSeq for Windows Version 4.0  
 ; SEQ ID NO 39  
 ; LENGTH: 19  
 ; TYPE: PRT  
 ; ORGANISM: Pisum sativum  
 ; US-09-371-347a-39

Alignment Scores:

Pred. No.: 182 Length: 19  
 Score: 34.00 Matches: 6  
 Percent Similarity: 53.85% Conservative: 1  
 Best Local Similarity: 46.15% Mismatches: 6  
 Query Match: 0.90% Indels: 0  
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-39 (1-19)

QY 1714 GGAGCAATGTGTTGTTTGGCTGACGCAATAGAGT 1752  
 Db 1 GlyLeuAlaTrpLeuPheLeuGlyValAlaAsnValasp 13

RESULT 42

US-09-371-347a-40

; Sequence 40, Application US/09371347A  
 ; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A,  
 ; APPLICANT: Rozen, Rima  
 ; APPLICANT: Leclerc, Daniel  
 ; APPLICANT: Wilson, Aaron  
 ; APPLICANT: Rosenblatt, David  
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
 ; FILE REFERENCE: 50004/003003  
 ; CURRENT FILING DATE: 1999-08-10  
 ; PRIOR APPLICATION NUMBER: 09/232,028  
 ; PRIOR FILING DATE: 1999-01-15  
 ; PRIOR APPLICATION NUMBER: 60/071,622  
 ; PRIOR FILING DATE: 1998-01-16  
 ; NUMBER OF SEQ ID NOS: 61  
 ; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 40  
 ; LENGTH: 18  
 ; TYPE: PRT  
 ; ORGANISM: Spinacia oleracea  
 ; US-09-371-347a-40

Alignment Scores:

Pred. No.: 208 Length: 18  
 Score: 31.00 Matches: 5  
 Percent Similarity: 62.50% Conservative: 3  
 Best Local Similarity: 62.50% Mismatches: 0  
 Query Match: 0.82% Indels: 0  
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-40 (1-18)

QY 1714 GGAGCAATGTGTTGTTTGGCTGACGCAATAGAGT 1737  
 Db 1 GlyLeuAlaTrpLeuPheLeuGly 8

RESULT 43

US-09-371-347a-36

; Sequence 36, Application US/09371347A  
 ; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A,  
 ; APPLICANT: Rozen, Rima  
 ; APPLICANT: Leclerc, Daniel  
 ; APPLICANT: Wilson, Aaron  
 ; APPLICANT: Rosenblatt, David  
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
 ; FILE REFERENCE: 50004/003003  
 ; CURRENT FILING DATE: 1999-08-10  
 ; PRIOR APPLICATION NUMBER: 09/232,028  
 ; PRIOR FILING DATE: 1999-01-15  
 ; PRIOR APPLICATION NUMBER: 60/071,622  
 ; PRIOR FILING DATE: 1998-01-16  
 ; NUMBER OF SEQ ID NOS: 61  
 ; SOFTWARE: FastSeq for Windows Version 4.0  
 ; SEQ ID NO 36  
 ; LENGTH: 18  
 ; TYPE: PRT  
 ; ORGANISM: Escherichia coli  
 ; US-09-371-347a-36

Alignment Scores:

Pred. No.: 214 Length: 18  
 Score: 30.00 Matches: 4  
 Percent Similarity: 85.71% Conservative: 2  
 Best Local Similarity: 57.14% Mismatches: 1  
 Query Match: 0.80% Indels: 0  
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-36 (1-18)

QY 1967 ATATCTTGATCTGCACAC 1947  
 Db 5 LeuPhePheGlyAsnProHis 11

RESULT 44

US-09-371-347a-59

; Sequence 59, Application US/09371347A  
 ; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A,  
 ; APPLICANT: Rozen, Rima  
 ; APPLICANT: Leclerc, Daniel  
 ; APPLICANT: Wilson, Aaron  
 ; APPLICANT: Rosenblatt, David  
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
 ; FILE REFERENCE: 50004/003003  
 ; CURRENT FILING DATE: 1999-08-10  
 ; PRIOR APPLICATION NUMBER: 09/232,028  
 ; PRIOR FILING DATE: 1999-01-15  
 ; PRIOR APPLICATION NUMBER: 60/071,622  
 ; PRIOR FILING DATE: 1998-01-16  
 ; NUMBER OF SEQ ID NOS: 61  
 ; SOFTWARE: FastSeq for Windows Version 4.0

```

; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PastSeq for Windows Version 4.0
; SEQ ID NO 59
; LENGTH: 6
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-59

```

```

Alignment Scores:
Pred. No.: 1.08e+03      Length: 6
Score: 29.00             Matches: 6
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.77%       Indels: 0
DB: 1                     Gaps: 0

```

us-09-371-347a-43 (1-2097) x US-09-371-347A-59 (1-6)

```

OY 1822 TCCTTCAGAGATGCT 1839
DB 1 SerpheserArgaspala 6

```

RESULT 45

```

US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

```

```

Alignment Scores:
Pred. No.: 183           Length: 22
Score: 29.00             Matches: 6
Percent Similarity: 60.00% Conservative: 0
Best Local Similarity: 60.00% Mismatches: 4
Query Match: 0.78%       Indels: 0
DB: 1                     Gaps: 0

```

us-09-371-347a-43 (1-2097) x US-09-371-347A-58 (1-22)

```

OY 515 GGTATGCCACCGAGTGGCCACTTATC 486
DB 7 GTPProGlyInGlyIleAlaProPheIle 16

```

Search completed: May 9, 2005, 15:32:08  
 Job time : 27 secs

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QY 121 TCCGATAGTATGACCTTAAAAACCGAAGACCTCTCTGTTGTTGTTGTTTACGACG 180  
DB 41 SeraspysstyryaspleuysrthnglunthralaProleuvalValvalSerthnthr 60  
QY 181 GGACCCGAGAGACCCACCCGACACAGCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240  
DB 61 GlyThrGlyaspProaspThrAlaArglySphenVallysglulileglnasnglnthr 80  
QY 241 CTGCGGCTGATTTCTTGTCTACACCTGCGGTATGGGTACTGGGTCTCGGATTCAGAA 300  
DB 81 LeuproValaspPhePheAlaHsLeuArgTylGlyLeuLeuGlyLeuGlyAspSerGlu 100  
QY 301 TACACCTACTTTTTCACATGGGGGAGATAATTGATTAACGACTTCAAGACTTGAGACC 360  
DB 101 TyThrTyrPheCySaenglyGlyVallelelspslysarGleuGlnGlyAla 120  
QY 361 CGGCAATTTATGACACTGACATGACATGACTGTGTAGGTTTGAACCTTGCTTGAG 420  
DB 121 ArgHsPheTyrAspThrnglyHsAlaAspAspCyValGlyLeuGlyLeuValGlylu 140  
QY 421 CCGTGATTTGCTGACTCTGGCCACCTCGAAGAAAGATTTTACGTCAAGAGAGACAA 480  
DB 141 ProThrIleagllyLeuTyrProAlaLeuArglyHsPheAspSerArgGlyGln 160  
QY 481 GAGAGATTAAGTGGCGACTCCCGTGAGCATCACCTGCATCTTGAGAGACAGACTTG 540  
DB 161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerleuAlaGlyThrAspLeuVal 180  
QY 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTCGAGCTTGAGATTCGATGATTCAGA 600  
DB 181 LysSerGlyLeuLeuHsIleGlySerGlyValGlyLeuLeuArgPheAspAspSerGly 200  
QY 601 AGAAGATTTCTGAGTTTGAACCAAAATGACATGAAACAGCAACCAATCCAAATGGTGA 660  
DB 201 ArgLysAspSerGlyValLeuysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220  
QY 661 ATTGAACATTTGAGTCTCCTCACTTACCCGTTCCGTTACCCCACTCTCAAGCCTCTCTG 720  
DB 221 IleGluAspPheGlyLeuSerSerleuThrArgSerValProProleuSerGlnAlaSerleu 240  
QY 721 AATATCTGTGTTTACCCCGAAGATTTTACAGGTACATTCGACGAGTCTCTTGCCGAG 780  
DB 241 AsnIleProGlyLeuProProGlyTyrLeuGlnValHsIleuGlnGlnSerleuGlyGln 260  
QY 781 GAGGAAGCAAGATATGTCGACTTCAGAGATCCAGTTTTCAGGCGCAATTCGAAG 840  
DB 261 GluGluSerGlyValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280  
QY 841 GCAATTCACCTTACTACGAATGATGCATMAAAACACTGTGTGTAGATTTGAGACTT 900  
DB 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrleuLeuValGlyLeuAspIle 300  
QY 901 TCAAAATCAAGATTTTCTTATCAGCTTGAGATGCTTCAGCGGTGATCTGCCCTTAACAT 960  
DB 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320  
QY 961 GATTCTGAGGTACAAAGCTTACTCCAAAGACTGACGCTTGAAAGTAAAGAGACAGCTGC 1020  
DB 321 AspSerGlyValGlnSerleuLeuGlnArgLeuGlnAspLysAspGlyHsIleCys 340  
QY 1021 GTCCTTTTGAATTAAGGACAGACACAAGAAAGAGAGTACCTTACCCGACATATA 1080  
DB 341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrleuProGlnHsIle 360  
QY 1081 CTGCGGAGATGTTCTTCACGTTATTTTACCTGCTGTCTTGAAATCCGACGAATTCCT 1140  
DB 361 ProAlaGlyCysSerleuGlnPheIlePheThrTyrCysLeuGlyIleAlaIlePro 380  
QY 1141 AAAAAGCATTTTTCGAGCCCTTGAGACTATCCAGTGCACATGCTGGAAGAGCGAGG 1200  
DB 381 LysLysAlaPheLeuAlaGlyAlaLeuValAspTyrThrSerAspSerAlaGlyLysArg 400  
QY 1201 CTACAGAGCTGTGACATTAACAAGGGGACGCGATTATACCGCTTTGTACGAGATGCC 1260

DB 401 LeuGlnIleuLeuCySerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla 420  
QY 1261 TGTGCTGCTTTTGGATCT 1320  
DB 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProleuSerleu 440  
QY 1321 CTGCTGCAACATCTTCTTAAACTTCAACCCAGACACATTCGTGTGAGAGCTCAAGTTTA 1380  
DB 441 LeuLeuGlnHsLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerleu 460  
QY 1381 TTTCCACCAAGAAAGCTCAATTTTGTCTTCAACATTTGGAATTTCTGTCTACTGCCACA 1440  
DB 461 PheHsProGlyLysLeuHsPheValPheAsnIleValGluPheLeuSerThrAlaThr 480  
QY 1441 ACAGAGTTCTCGGAAAGGAGATATGACAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1500  
DB 481 ThrGlyValLeuArglyGlyValCysThrGlyTyrPheuAlaLeuLeuValAlaSerVal 500  
QY 1501 CTTGACGCAACATACATGATCCCATGAAGACAGCGGAAAGCCCTGCTCTTAAGATA 1560  
DB 501 LeuGlnProAsnIleHsAlaSerHsGlnAspSerGlyLysAlaLeuAlaProLysIle 520  
QY 1561 TCCATCTCTCTCGAACACAAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620  
DB 521 SerIleSerProArgThrThrAsnSerPheHsLeuProAspAspProSerIleProIle 540  
QY 1621 ATTAATGGTGGGTCCAGAACCCGAGATAGCCCTTTATTTGGGTCTCTTCAACATNAGAG 1680  
DB 541 IleMetValGlyProGlyThrnglyLysAlaProHelleGlyPheLeuGlnHsAlaGlyGln 560  
QY 1681 AAATCCAAAGAACCAACCCAGATGAAATTTTGAACAATGAGTGTGTTTGTGCTGC 1740  
DB 561 LysLeuGlnGlnGlnHsProAspGlyAsnPheGlyAlaMetThrPhePheGlyCys 580  
QY 1741 AGCGATTAAGATAGGATTAATCTATTGAAAAGAGCTCAGACATTTCTTAAAGATGG 1800  
DB 581 ArgHsLysAspArgAspTyrLeuPheArglyGlyLeuArgHsPheLeuLysHsIleGly 600  
QY 1801 ATCTTAATCTGATCTTAAAGCTTCTCTCTCTCAAGAGATGCTCTGTGGGAGGAGGAAGCC 1860  
DB 601 IleLeuThrHsLeuLysValSerPheSerArgAspAlaProValGlyGluGluAla 620  
QY 1861 CCAGCAAGATATGACAAAGACCAACATCAGCTTCAATGAGCAGAGTGGAGATCTTC 1920  
DB 621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHsGlyGlnGlnValAlaArgIleLeu 640  
QY 1921 CTCCAGAGAAAGGCAATATTATGTGTGTGAGATGCAAAAGATATGGCCAGAGATGTA 1980  
DB 641 LeuGlnGluAsnGlyHsIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660  
QY 1981 CATGATGCCCTTGCAATTAATTAAGCAAGAGGTGAGTTGAGTGAAGAAATAGAAAGCATG 2040  
DB 661 HIsAspAlaLeuValGlnIleIleSerLysGlyValGlyAlaGlyLysLeuGlnAlaMet 680  
QY 2041 AAAACCTGGCCACTTTAAAGAAAGAAAGCGTCACTTCAAGATATTGGTCA 2094  
DB 681 LysThrleuAlaThrleuLysGlyGlyLysArgTyrleuGlnAspIleTpsSer 698  
  
RESULT 2  
US-09-371-347A-2  
Sequence 2, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Grovel, Roy A.  
APPLICANT: Rosen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHYLONINE SYNTHASE REDUCTASE:  
CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371.347A





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QY 1861 CCAGCAAGTATGTACAAAGCAACATCCAGCTTCATGGCCAGAGTGAGCAATCCTC 1920
DB 621 ProhlaLysrTyRValGlnAspAsnIleGlnLeuHISglnglnValAlaArgIleLeu 640
QY 1921 CTCGAGAGAAAGCGCCATATTATTATGTGTGTGAGATGCAAAAGATATGCCAGATGTA 1980
DB 641 LeuGlnGlnuAengIyHISileTyRValCysGlyAspAlaLysAsnMetAlaLysVal 660
QY 1981 CATATGCCCCCTGTGCAAAATATATAGCAAGAGGTGAGTGAATAAATCTAGAAGCATG 2040
DB 661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlnLysLeuGlnAlaMet 680
QY 2041 AAACCTGGCCACTTTTAAAGAGAAAGCGTACCTTCAGATATTGGTCA 2094
DB 681 LysThrLeuAlaThrLeuLysGlnLysArgTyRLeuGlnAspIleTrpSer 698

RESULT 3
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 5,68e-67 Length: 698
Score: 3620.00 Matches: 697
Percent Similarity: 100.00% Conservative: 1
Best Local Similarity: 99.86% Mismatches: 0
Query Match: 96.12% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-21 (1-698)
QY 1 ATGAGAGAGTTTGTGTTATCTATATGCTACACAGAGGAGACAGGAAAGCCATGCGAGAA 60
DB 1 MetArgArgPheLeuLeuLeuTyRAlaThrGlnGlnGlnAlaLysAlaIleAlaGln 20
QY 61 GAAATATGTGAGCAAGCTGTGTGATCATGAGATTTTCTGCAATCTTCACTGATATAGTAA 120
DB 21 GlnMetCysGlnGlnAlaValAlaHISglYpHeSerAlaAspLeuHIScysIleSerGln 40
QY 121 TCCGATAGTATGACTTAATAAAGCGAAACAGCTCCTCTGTGTGTGTGTGTGTGTGTGTCA 180
DB 41 SerAspLysTyRAspLeuLysThrGlnThrAlaProLeuValAlaValAlaSerThrThr 60
QY 181 GGCACCGGAGACCCAGCCGACAGACAGCCGCAAGTTTGTTAAGAAATACAGAACCAACA 240
DB 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
QY 241 CTCGCCGTTGATTTCTTTGCTACCTGGCGGTATGGGTTACTGGGTTCTGGGTTACAGAA 300
DB 81 LeuProValAspPhePheAlaHISleuArgTyRglYleuGlnGlyLeuGlyAspSerGln 100
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QY 301 TACACCTACTTTTGCATGGGGGGAGATATTGATTAACAGACTTCAAGACTTGGAGCC 360
DB 101 TyRThrTyRheCysAsnGlnGlyLysIleIleAspLysArgLeuGlnLysLeuGlyAla 120
QY 361 CGGCATTTCATGACACTGGACATGACGATGACTGTGTAGGTTTATGAACCTTGTGGTGG 420
DB 121 ArgHISpHeTyRAspThrGlnHISAlaAspAspCysValAlYleuGlnLeuValValGln 140
QY 421 CCGTGAGTTGCTGGACCTCGGCGACCCCTGAGAAAGCATTTTGGTCAAGAGAGACAA 480
DB 141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHISpHeArgSerSerHISglYgln 160
QY 481 GAGGAGATAAGTGCGGCACTCCGCTGGCATCACTTCGATCCTTGAAGACAGACCTTGTG 540
DB 161 GlnGlnIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGCTACACATTGAATCTCAAGTGGAGCTTTCGATTCGATTCGATTCGAG 600
DB 181 LysSerGlnLeuLeuHISISleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
QY 601 AGAAGGATTCGAGGTTTGAAGCAAAATGCAGTGAACAGCAACCAATCCAAATGTTGTA 660
DB 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerHISnglnSerAsnVal 220
QY 661 ATGAGACCTTGTAGTCCCTCACTTACCCGTTGGTACCCCACTTCACAGCCCTCTGTG 720
DB 221 IleGlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 AATTTCTGTGTTATCCCGCAATATTATTCAGGTATCTGCAGAGAGTCTTTGGCCAG 780
DB 241 AsnIleProGlyLeuProProGlnTyRLeuGlnValHISleuGlnGlnSerLeuGlyGln 260
QY 781 GAGGAAGCCCAAGTATGTGACTTCAGCAGATCCAGTTTTCAGAGCCAAATTTCAAG 840
DB 261 GlnLysSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
QY 841 GCAAGTTCACTTACTACGAAATGATGCCATTAACCACTGCTGTGATGATGGACATT 900
DB 281 AlaValGlnLeuThrThrAsnAspAlaIleLeuThrThrLeuLeuValGlnLeuAspIle 300
QY 901 TCAATATCAGACTTTTCTTACAGCCCTGGAGATGCTTCAGCGGTGATCTGCCCTTAAGT 960
DB 301 SerAsnThrAspPheSerTyRglnProGlyAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTCGAGGATCAAAAGCTTACTCCAAAGACTGAGAGCTTGAAGTAAAGAGACATGTC 1020
DB 321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlnHIScys 340
QY 1021 GTCCCTTTGAAATTAAGGAGACACAAAGAGAGAGAGCTTACCCAGCATATA 1080
DB 341 ValLeuLeuLysIleLysAlaAspThrLysLeuGlyAlaThrLeuProGlnHISile 360
QY 1081 CTCGCGGAGATGTTCTCTCAAGTTTATTTTACCTGGTGTCTTGAATCCAGCAATTCCT 1140
DB 361 ProIleGlyCysSerLeuGlnPheIlePheThrTrpLysLeuGlnIleArgAlaIlePro 380
QY 1141 AAAAAGCATTTTGGAGAGCCCTGTGACTATTCAGTGAAGTGTGTAAGCGCAGG 1200
DB 381 LysLysAlaPheLeuAlaValAlaValAspTyRThrSerAspSerAlaGlnLysArgArg 400
QY 1201 CTACAGAGCTGTGCACTTAACAAAGGAGCCGATTAAGCGCTTTGTACGAGATGCC 1260
DB 401 LeuGlnGlnLeuLeuCysSerLysGlnGlyAlaAlaAspTyRSerArgPheValArgAspAla 420
QY 1261 TGTCCTGCTGTTGGATCTCTCTCTGCTTTCCTTCCAGCCAGCCAGCACTAGTCTC 1320
DB 421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGCAACATCTTCTTAACCTTAACCAAGCAATTCGATGAGTCAAGTCTTA 1380
DB 441 LeuLeuGlnHISleuProLysLeuGlnProArgProTyRSerCysAlaSerSerLeu 460
```

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QY 1381 TTTCACCCAGGAAAGCTCCATTTTGTCTTCAACATTTGGATTTCTGTCTTACGACCA 1440
| | | | |
Db 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
QY 1441 ACAGAGTTCTTGGCGAAGGAGATGTACAGGCTGCGCTGTGTTGGTCTTCACTT 1500
| | | | |
Db 481 ThrGluValLeuArgLysGlyValCysThrGlyThrPheValAlaLeuValAlaSerVal 500
QY 1501 CTTGAGCCCAACATATGATGATCCCATGAGACGCGGGAAGCCCTGGCTCTTAAGTA 1560
| | | | |
Db 501 LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle 520
QY 1561 TCCATCTCTCTCGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
| | | | |
Db 521 SerIleSerProAlaGlyThrThrAsnSerPheHisLeuProAspProSerIleProIle 540
QY 1621 ATAAATGTGGGTCCAGAAACCGGCAATGACCCCGTTTATGGTCTTCAACATAGAGAG 1680
| | | | |
Db 541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
QY 1681 AAATCCCAAGAACACACCCAGATGGAATTTGGAGCAATGTGGTGTGTTTGGCTGC 1740
| | | | |
Db 561 LysLeuGlnGlnGlnHisProAspLysAsnPheGlyAlaMetThrPhePheGlyCys 580
QY 1741 AGGATTAAGATAGGAGATTATCTATTCAGAAAAGAGCTCAGACATTTCTTAAGCATGG 1800
| | | | |
Db 581 ArgHisLysAspArgAspThrLeuPheArgLysGluLeuArgHisPheLeuLysHisGly 600
QY 1801 ATCTTAATCTCATTAAGAGTTTCTTCTCAAGAGATGCTCTGTTGGGAGAGAGAGCC 1860
| | | | |
Db 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGlnIle 620
QY 1861 CCAGCAAGATGTATTCACAGACACATCCAGCTTTCAGGCCACAGGTGGCCAGATCTTC 1920
| | | | |
Db 621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
QY 1921 CTCAGAGAGACGGCCATATTATGTATGTGTGAGAGATGCAAGAATATGAGCATGTA 1980
| | | | |
Db 641 LeuGlnGlnAsnGlnHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
QY 1981 CATGATGCCCTTGTGCAAATATATTAAGCAAGAGTTGAGTTGAAAATGAAAGCAATG 2040
| | | | |
Db 661 HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGlnIleMet 680
QY 2041 AAAACCTGGCCCACTTTAAAGAGAAAAGCTTACCTTCAGATATTTGGTCA 2094
| | | | |
Db 681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTyrLeuGlnAspIleTyrSer 698

RESULT 4
US-09-371-347A-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN MENTIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRF
; ORGANISM: Homo sapiens

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US-09-371-347A-44
Alignment Scores:
Pred. No.: 8 75e-67 Length: 698
Score: 3610.00 Matches: 696
Percent Similarity: 99.86% Conservative: 1
Best Local Similarity: 99.71% Mismatches: 0
Query Match: 95.86% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-44 (1-698)
QY 1 ATGAGAGAGTTTCTGTTACTATATGCTACACAGGAGGACAGGAAAGCCATGCGAGAA 60
| | | | |
Db 1 MetArgThrPheLeuLeuLeuTyrAlaThrGlnGlnGlnAlaLysAlaIleAlaGlu 20
QY 61 GAATATGTAGCAAGAGTGTGTACATGAGATTTTCTGCAATCTTCACTGTATTAAGTAA 120
| | | | |
Db 21 GluMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisThrIleSerGlu 40
QY 121 TCCGATTAAGTATGACCTTAAACCGGAACAGCTCTGTGTTGGTGTCTTACACAG 180
| | | | |
Db 41 SerAspLysTyrAspLeuLysThrGlnThrAlaProLeuValValValAlaSerThrThr 60
QY 181 GGCACCCGAGACCCACCCGACACAGCCGCAAGTTTGTGAAGAAATACAGAACCAACA 240
| | | | |
Db 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluIleGlnAsnGlnThr 80
QY 241 CTGCGGTTGATTTCTTGTCTACCTGCGGTATGAGTTACTGGGTCTTGGTGAATTCAGAA 300
| | | | |
Db 81 LeuProValaAspPhePheAlaHisLeuValArgLysGlyLeuLysGlyLysAspSerGlu 100
QY 301 TACACCTACTTTTTCATATGGGGGGAAGATATATTAAGCACTTCAAGACCTTGGAGCC 360
| | | | |
Db 101 TyrThrTyrPheCysAsnGlyGlyLysIleLeuAspLysGluGlnGlnLysGlyVala 120
QY 361 CGGATTTCTATGACACTGTGACATGACAGATGACCTGTAGTTTGAACCTTGGTTGAG 420
| | | | |
Db 121 ArgHisPheTyrAspThrGlnGlnHisAlaLysAspCysValGlyLeuGlnLeuValGlu 140
QY 421 CCGTGATGTGTGACCTCTGCGCACCCCTCAGAAAGCATTTTAAAGTCAAGAGAGACAA 480
| | | | |
Db 141 ProThrIleAlaGlyLeuThrProAlaLeuLysGlyHisPheArgSerSerArgGlyGln 160
QY 481 GAGAGATTAAGTGGCGGACCTCCCGGTGGACATGACCTGATCCTTGAGGACAGACCTTGTG 540
| | | | |
Db 161 GlnGlnIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTTCGAGCTTTCGATTCGATGATTCAGGA 600
| | | | |
Db 181 LysSerGlnLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspSerGly 200
QY 601 AGAAGAGATTTCTGAGGTTTGAACCAAAATGCACTGGAACAGCAACCAATCCATGTTGTA 660
| | | | |
Db 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
QY 661 ATTGAAGACTTTGAGTCTCACTTACCCGTTGCGTACCCCACTCTCACAAGCCTCTCTG 720
| | | | |
Db 221 IleGlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 AATATCTCTGTTTACCCCGCAATATTTTACAGATGATTCGAGAGTCTCTTGGCCAG 780
| | | | |
Db 241 AsnIleProGlyLysProProGlnTyrLeuGlnValHisLeuGlnGlnSerLeuGlnGln 260
QY 781 GAGGAAGCCCAAGTATCTGTGACTTCAGACAGATCCAGTTTTCAGTGCCCAATTTCAAG 840
| | | | |
Db 261 GlnGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
QY 841 GCAGTTCACTTACTTACGAATGATGACCATTAATAACCACTGCTGCTGTAGATTGACATT 900
| | | | |
Db 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
QY 901 TCAATATACAGACTTTCTTATCAGCTTGAAGATGCTTTCAGCGTATCTGCGCTTAACAGT 960
| | | | |

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Db      |||
301 SerAsnThrAspSerSerTyGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      |||
961 GATTCTGAGGTACAAACCTTACTCCAAAGACTGACGCTTGAGATTAAGTAAGAGACACTGC 1020
Db      |||
321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlnHisCys 340
Qy      |||
1021 GTCCCTTTGAAATAAAGGCGACACAAAGAAAGAGAGTACCTTACCACGACATATA 1080
Db      |||
341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy      |||
1081 CTGCGGAGATGTTCTCTCCAGTTCAATTTTAACTGGTGTCTTGAATCCGAGCAATTCCT 1140
Db      |||
361 ProIaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
Qy      |||
1141 AAAAAGCATTTTGGACGACCTTGTGACATATACGATACGATACATGCTGAAAACGACG 1200
Db      |||
381 LysLysAlaPheLeuArgAlaLeuValAspLysThrSerAspSerAlaGlnLysArgArg 400
Qy      |||
1201 CTACAGAGCTGTGCTAGTAAACAAGGCGACGCGATTAATAGCCGCTTTGTACGAGATGCC 1260
Db      |||
401 LeuGlnGlnLeuCysSerLysGlnGlyAlaAlaAspLysSerArgPheValArgAspAla 420
Qy      |||
1261 TGTGCTGCTTTGTGATCTCTCTGCTTCCCTTCTTGCCAGCCACACTCAGTCTC 1320
Db      |||
421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Qy      |||
1321 CTGCTGCAACATCTTCTTAAACCTTCAACCCGACGACATATTCGTTGCAAGCTCAAGTTTA 1380
Db      |||
441 LeuLeuGlnHisLeuProLysLeuGlnProArgProLysSerCysAlaSerSerLeu 460
Qy      |||
1381 TTTCACCCAGGAAAGCTCCATTTTGTCTTCAACATTTGGAATTTCTGTCTACTGCCACA 1440
Db      |||
461 PheHisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
Qy      |||
1441 ACAGAGTTCTGCGGAAGGAGATGTACAGCTGCGCTGCTGTTGTTGCTTCACTT 1500
Db      |||
481 ThrGlnValLeuArgLysGlyValCysThrGlyTrpLeuAlaLeuValAlaSerVal 500
Qy      |||
1501 CTTTCAGCGCAACATACATTCGATCCCATGAGAAGCGGGAAGCGCTGCTCCCTAAGATA 1560
Db      |||
501 LeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIle 520
Qy      |||
1561 TCCATCTCTCCCTCGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Db      |||
521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Qy      |||
1621 ATAAATGTGGGTCCAGAACCGGACATAGCCCGTTTATTTGGTTCTTACCAATAGAGAG 1680
Db      |||
541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGln 560
Qy      |||
1681 AAAATCCAAAGAACACCCAGATGGAATTTTGAGCAATGCAATGCTGTTTGGTGC 1740
Db      |||
561 LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaMetTrpLeuPhePheGlyCys 580
Qy      |||
1741 AGGCATAGAGATGAGATTTACTATTTCAGAAAAGAGCTGACATTTCTTAAAGCATGGG 1800
Db      |||
581 ArgHisLysAspArgAspTrpLysLeuPheArgLysGlnLeuArgHisPheLeuLysHisGly 600
Qy      |||
1801 ATCTTAATCATCTTAAAGGTTTCTTCTCAAGAGATGCTCTGTTGGGAGGAGGAAGCC 1860
Db      |||
601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGlnGlnAla 620
Qy      |||
1861 CCAGCAAGATGTATGACAAAGAACATCATCGCTTATGCGCGACGAGTGGGAGATCTC 1920
Db      |||
621 ProIaLysTrpValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
Qy      |||
1921 CTCGAGAGAAACGCGCATTTATGTGTGTGTGAGATGCAAGAATATGCGCCAGATGTA 1980
Db      |||
641 LeuGlnGlnLysGlnHisIleTyValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Qy      |||
1981 CATGATCCCTTGTGCAATATATAGCAAGAGGTTGAGTTGAAAACTAGAAAGCATG 2040

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Db      661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyValGlnLysLeuGlnAlaMet 680
Qy      2041 AAAACCTGGCGCACTTTAAAGAAAGAAAGCGTACCTTCAGATATATTGGTCA 2094
Db      681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTyLeuGlnAspIleTrpSer 698

RESULT 5
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Kozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.: 1 06e-66 Length: 697
Score: 3605.50 Matches: 696
Percent Similarity: 99.86% Conservative: 1
Best Local Similarity: 99.71% Mismatches: 0
Query Match: 95.74% Indels: 1
DB: 1 Gaps: 1

us-09-371-347a-41 (1-2097) x US-09-371-347A-46 (1-697)
Qy      1 ATGAGAGAGTTTCTGTTACTATATGCTACACAGAGGACGGAAGGCATGACAGAA 60
Db      1 MetArgHisPheLeuLeuLeuTyAlaThrGlnGlnGlnLysAlaIleAlaGln 20
Qy      61 GAAATATGTACGACAGCTGTGGTACATGATTTTCTGCAATCTTCACTGTATTAGTAA 120
Db      21 GlnMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGln 40
Qy      121 TCCGATAGATGATACCCATAAAACCGAAGAGCTCCTGTTGTTGGTGGTTCTACACAG 180
Db      41 SerAspLysTrpAspLeuLysTrpHisGlnThrAlaProLeuValAlaValSerThr 60
Qy      181 GGCACCGGAGACCCACCGACACAGCCGCAAGTTTGTTAAGAAATACAAACAAACA 240
Db      61 GlyThrLysAspProArgAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
Qy      241 CTGCGGTTGATTTCTTTGCTCACCTCGGATAGGTTACTGGGCTCGGTGATTTCAGAA 300
Db      81 LeuProValAspPhePheAlaHisLeuArgTyGlyLeuLeuGlyLeuGlyAspSerGln 100
Qy      301 TACACCTACTTTTGCAATGGGGGAGAGATTAATGATTAAGACTTCAAGAGCTTGAGCC 360
Db      101 TyThrTrpPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlnGlyAla 120
Qy      361 CGGCAATTCATGACACTGTGACATGACATGACATGTGTAGATTGAACTTGTGTTGAG 420
Db      121 ArgHisPheTrpAspThrGlnHisAlaAspAspCysValGlyLeuGlnLeuValGln 140
Qy      421 CCGTGATTGCTGAGCTCTGCGACGCTTCAAGAAAGATTTTAGCTTAAGCAGAGACA 480

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Db      141  ProTrpIlealaGlyLeuTrpProAlaLeuArgLysHISphArgSerSerArgGlyGln 160
Qy      481  GAGGAGTAAGTGGGCGACCTCCGGTGGCATCACCTGCATCTTGAGGAGACAGACTTGTG 540
Db      161  GluGluLeuSerGlyAlaLeuProValAlaSerProAlaSerLeuAlaGlyThrAspLeuVal 180
Qy      541  AAGTCAGAGCTGCTACACATTGAATCTCAGTCGAGCTTCTGAGATTGATGATTCAGAGA 600
Db      181  LysSerGluLeuLeuHisIleGluSerGlnValGluLeuLeuArgPheAspAspSerGly 200
Qy      601  AGAAGAGATTCTGAGGTTTGAAGCAAAATGCAAGTGAACAGCAACCAATCCATGTTGTA 660
Db      201  ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
Qy      661  ATTAAGACTTTGAGTCTCACTTACCCGTTCCGATCCGACCTCTCAAGACCTCTGTG 720
Db      221  IleGluAspPheGluSerSerLeuThrArgSerValProPheLeuSerGlnAlaSerLeu 240
Qy      721  AATATTCCTGTGTTACCCCGACAAATATTTCAGAGTACATTCGACGAGTCTTGGCCAG 780
Db      241  AsnIleProGlyLeuProProGlyLeuGlnValHisLeuGlnGluSerLeuGlyGln 260
Qy      781  GAGAAAGCCAGATATCTGTACTTCAGCAGATCCAGTTTTCAGTCCCAATTCAAAG 840
Db      261  GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Qy      841  GCAATTCACCTTACTTACGAATGATGCCATAAAACCACTCGTGTGATGATTCGACATT 900
Db      281  AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
Qy      901  TCAATATCAGACTTTTCTTATCAGCTGAGATGAGCTTCAGCGTATGCTGCTTAACAGT 960
Db      301  SerAsnThrAspPheSerTyGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      961  GATTCTGAGGTACAAAGCTTACTCCAAAGACTGACGCTTGAAGATAAAGAGACACTGC 1020
Db      321  AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlyHisIleCys 340
Qy      1021  GTCCCTTTGAAATTAAGGCGACACAAAGAAAGAGAGTACTTACCCGACAGATTA 1080
Db      341  ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy      1081  CCTGCGGAGATGTTCTCTCAGTTCATTTTACTGTGTCCTTGAATCCGAGCAATTGCT 1140
Db      361  ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGluIleArgAlaIlePro 380
Qy      1141  AAAAAGGATTTTTCGAGCCCTTGTGAGCTATACACAGTGCAGTGTGAAAGCGCAGG 1200
Db      381  LysIleAlaPheLeuArgAlaLeuValAspLysThrSerAspSerAlaGluLysArgArg 400
Qy      1201  CTACAGAGAGCTGTGCAGTAAACAAAGGGGACGCCATTATACCGCTTTGTACGAGATGCC 1260
Db      401  LeuGlnGluLeuCysSerLysGlnGlyAlaAlaAspLysSerArgPheValArgspAla 420
Qy      1261  TGTGCTGCTGTTGGATCTCTCTCGCTTCCCTTTCGACGACCACTAGTCTC 1320
Db      421  CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProPheLeuSerLeu 440
Qy      1321  CTGCTGGAACATCTTCTTAACTTCAACCCAGACCATATTCGTGTGCAAGCTCAAGTTTA 1380
Db      441  LeuLeuGlnHisLeuProLysLeuGlnProArgProTySerCysAlaSerSerSerLeu 460
Qy      1381  TTTTCAACCCAGAAAGCTCATTTTGTCTTCAACATTTGGAAATTTTGTCTTACGCGCA 1440
Db      461  PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Qy      1441  ACAGAGGTTTGGCGAAGGAGATATGTACAGGCTGGCGCTTGTGTTGTTCAAGTT 1500
Db      481  ThrGluValLeuAlaGlyGlyValCysThrGlyTrpLeuAlaLeuLeuValAlaSerVal 500
Qy      1501  CTTGAGCCCAACATACATGATCCCATGAAAGACAGCGGAAAGCCCTGGCTCTTAAGATA 1560
Db      501  LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle 520

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Qy      1561  TCCATCTCTCCTCGAACAACAATTTCTTCCATTACAGATGACCCCTCATCCTCCATC 1620
Db      521  SerIleSerProArgThrThrAsnSerPheHisIleuProAspAspProSerIleProIle 540
Qy      1621  ATTAATGTGGGTCCAGAAACCGGCATAGCCCGCTTATTTGGGTTCTTCAACATAGAGAG 1680
Db      541  IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Qy      1681  AAATCCAAAGAACCAACCCAGATGAGAAATTTTGACCAATGTCGTTTGTGTTGGCTGC 1740
Db      561  LysLeuGlnGluGlnHisAspAspGlyAsnPheGlyAlaMetCys---PhePheGlyCys 579
Qy      1741  AGCATAAGATATGAGATTAATCTTATTCAGAAAGAGCTCAGACATTTCTTAAGCATGGG 1800
Db      580  ArgHisLysAspAlaGlyAspTyLeuPheArgLysLeuLeuArgHisPheLeuLysHisGly 599
Qy      1801  ATCTTAATCTCATTTAAAGGTTTCTTCTTCAAGATGCTCTGTGGGAGAGAGAACCC 1860
Db      600  IleuThrHisIleuLysValSerPheSerArgspAlaProValGlyGluGluGluAla 619
Qy      1861  CCAGCAAGATATGTAACAAGCAACATCCAGCTTCATGCGCAGCGTGGGAGATCCTC 1920
Db      620  ProAlaLysTyValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 639
Qy      1921  CTCGAGGAGAACGCGCATATTATGTCGTGAGATGCAAGATGCAAAAGATATGCGCAAGATGTA 1980
Db      640  LeuGlnGluAsnGlyHisIleTyValCysGlyAspAlaLysAsnMetAlaLysAspVal 659
Qy      1981  CATGATGCCCTTGTGCAATTAATTAAGCAAAAGAGGTGTGAGTTGAGTGAATACTGAAGCAATG 2040
Db      660  HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGlyLysLeuGluAlaMet 679
Qy      2041  AAAACCTGGGCACTTTTAAAGAAAGAAACGCTACCTTCAGGATATTTGGTCA 2094
Db      680  LysThrLeuAlaThrLeuLysGluGluLysArgTyLeuGlnAspIleTyrSer 697

RESULT 6
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 2,77e-64 Length: 689
Score: 3477.00 Matches: 686
Percent Similarity: 98.57% Conservative: 2
Best Local Similarity: 98.28% Mismatches: 1
Query Match: 92.33% Indels: 9
DB: 1 Gaps: 6
us-09-371-347a-41 (1-2097) x US-09-371-347A-48 (1-689)

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QY 4 AGGAGTTTCGTTACTATATGCTTACACAGGAGGAGCAAGGCGCATCGCAGAAAG 63
Db 1 ArgArgPheLeuLeuLeuYrAlaThrGlnGlnGlnAlaAlaLeuGln 20
QY 64 ATATGTGAGCAAGCTGTGTGATCATGATTTTCTGCAGATCTTCACTGTATTTAGTAATCC 123
Db 21 MetCysGlnGlnAlaValAlaHISGLYPheSerAlaPheLeuHISGLYSerGlnSer 40
QY 124 GATAGTATGACTTAAACCCGAAACAGCTCTCTGTGTGTGTGTGTGTGTGTGTGTGTGTGT 183
Db 41 AspLysTrpAspLeuLysThrGlnThrAlaProLeuValAlaValSerThrThrGly 60
QY 184 ACCGAGAGCCAGCCGACAGCCGCAAGCTTGTGTAAGAAATACAGAAACCAACACTG 243
Db 61 ThrGlyAspProProAspThrAlaArgLysPheValLysGlnLeuGlnAsnGlnThrLeu 80
QY 244 CCGGTTGATTTCTTTGCTCACCTGCGGTATGGTGTACTGGGTCTCGGTGATTCAGAAATAC 303
Db 81 ProValAspPhePheAlaHISLeuArgTrpGlyLeuLeuGlnLysAspSerGlnTrp 100
QY 304 ACCTACTTTTGCATTTGGGGGGAATATTAATGATAAGACTTCAAGACTTGGAGCCCG 363
Db 101 ThrTrpPheCysAsnGlyGlyLysLLeuAspLysArgLeuGlnLysGlyAlaArg 120
QY 364 CATTTCTATGACATGACATGACATGACTGTGTAGGTTTGAAGCTTGTGTGTGTGTGTGTGT 423
Db 121 HisPheTrpAspThrGlyHisAlaAspAspCysValGlyLeuGlnLeuValAlaGlnPro 140
QY 424 TGGATTCGTGACTCTGGCCAGCCCTCAGAAAGCAATTTTGTAGGTCAAGCAGAGCAAGAG 483
Db 141 TrpLeuArgLysLeuTrpProAlaLeuArgLysHisPheArgSerSerArgLysGlnGln 160
QY 484 GAGTATGTCGGGACCTCCGGTGGCATCACCTGCATCTTGAAGACAGACCTTGTGAAG 543
Db 161 GlnLysSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuValLys 180
QY 544 TCAGAGCTGTACACATTTGATCTCAAGTCAGCTTGTGAGATTCAGATTCAGAGAGA 603
Db 181 SerLeuLeuLeuHISLeuSerGlnValGlnLeuLeuArgPheAspAspSerGlyArg 200
QY 604 AAGGATTCGTGAGTTTGAAGCAAAATGACAGTGAACAGCAACCAATCCATGTTGTAAT 663
Db 201 LysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValAla 220
QY 664 GAAGACTTGTAGTCTCAGCTTACCGGTCCGTACCCCATCTCACAAGCTCTGTGAT 723
Db 221 GlnAspPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeuAsn 240
QY 724 ATTCCGTGTTTACCCCGAGATATTTACAGGTACATCTGCAGAGTCTTTGGCCAGAG 783
Db 241 IleProGlyLeuProProGlnLysLeuGlnValHISLeuGlnGlnSerLeuGlnGln 260
QY 784 GAAAGCCCAAGTATCTGTGACTTTCAGCAGATCCAGTTTTCAGTGCCCAATTTCAAAGCA 843
Db 261 GlnSerGlnValSerValThrSerAlaAspProValPheGlnValProLysSerLysAla 280
QY 844 GTTCAACTACTAGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGAT 903
Db 281 ValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspLysSer 300
QY 904 AATAAGACTTTTCTTCACTCAGCTGTGAGATGCTTTCAGCGTGTATCTGCTTACAGATGAT 963
Db 301 AsnThrAspPheSerTrpGlnProGlyAspAlaPheSerValIleCysProAsnSerAsp 320
QY 964 TCTGAGGTCAAGCTTACTCTCAAAAGACTGTGAGCTTGAAGTAAAGAGACACTGCGTC 1023
Db 321 SerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnLysArgLysGlnHISCysVal 340
QY 1024 CTTTGAAGAAATTAAGGAGCAGACAAAGAGAGAGAGCTTACCTTACCCAGCATATTCCT 1083
Db 341 LeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHISLeuPro 360
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QY 1084 GCGGATGTTCTCTCCAGTTCAATTTTACTGGTGTCTGAAATCCGAGCAATTTCTTAA 1143
Db 361 AlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnLysAlaIleProLys 380
QY 1144 AAGGCAATTTTGGAGCCCTTGTGAGCTATACAGTGCAGCTGTGAAAAAGCCGAGCTA 1203
Db 381 LysAlaPheLeuArgAlaLeuValAspTrpThrSerAspSerAlaGlnLysArgArgLeu 400
QY 1204 CAGAGCTGTGCAATTAACAAAGGGGCGCGGATTAATGACCGCTTTGTAGACAGATGCTGT 1263
Db 401 GlnIleuLysCysSerLysGlnGlyAlaAlaAspTrpSerArgPheValArgAspAlaCys 420
QY 1264 GCGTCTTGTGGAATCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCT 1323
Db 421 AlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeuLeu 440
QY 1324 CTGCAACATCTTCTTAACTTCAACCCAGACCATTTCTGTGTGCAAGCTCAAGTTATTT 1383
Db 441 LeuGlnHISLeuProLysLeuGlnProArgProLysSerCysAlaSerSerSerLeuPhe 460
QY 1384 CACCCAGAAAGCTCCATTTTGTCTTCAACATTTGTGGAATTTTGTCTTCACTGCACACACA 1443
Db 461 HisProGlyLysLeuHISLeuPheValPheAsnIleValGlnPheLeuSerThrAlaThrThr 480
QY 1444 GAGGTTCTGGGAGAGGAGTATGTACAGCTGAGCTGGCTGTGTGTGTGTGTGTGTGTGT 1503
Db 481 GlnValLeuArgLysGlyValCysThrGlyTrpLeuAlaLeuLeuValAlaSerValLeu 500
QY 1504 CAGCCAAACATACATGATATCCCATGAAAGACAGGGGAAACCCCTGTGCTTAAGATATCC 1563
Db 501 GlnProAsnIleHISAlaSerHISGlnAspSerGlyLysAlaLeuAlaProLysIleSer 520
QY 1564 ATCTCTCTCGAACAACAATTTCTTCACTTCAAGATACCCCTCAATCCCATCATATA 1623
Db 521 IleSerProArgThrThrAsnSerPheHISLeuProAspAspProSerIleProIleIle 540
QY 1624 ATGGTGGTCCAGAACCCGCAATGACCCCTTATTTAGGTTTCTTCAACAATPAGAGAAA 1683
Db 541 MetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHIS---ArgAs 559
QY 1684 CTCCAAGAACACACCCAGATGGAATTTTGGAGCAATGTGTGTGTGTGTGTGTGTGTGTGT 1743
Db 559 nSerLysAsnAsnThrGlnMetGlnLysLeuGlnGlnCysGlyCysPheLeuAlaIleG 579
QY 1744 CATPAGGATGGGATTAATCTATTCAAGAAAAGCTCAGACATTTCTTAAAGATGGGATC 1803
Db 579 YlleArgIleGlyYlleIleTrpSerGlnLysSerSerAspLysSerLeuSerMetGlySe 599
QY 1804 TTAATCATCTTAAAGGTTTCTCTTCAAGAGATGCTCTGTGGAGAGAGAGAGCCCA 1863
Db 599 r-----LeuIleArgPheProSerGlnGlnMetLeuLeuGlnGlyArgArgLysProG 617
QY 1864 GCAAGTATGTACAGACACATCCAGCTTCAAGGCGCAGAGGCGGAGAAATCTCTCTC 1923
Db 617 nGlnSerMetTrpLysThrThrSerSerPheMetAlaSerArgTrpArgLysSerSe 637
QY 1924 CAGAGAACCGCCATATTTATGTGTGTGAGATGCAAGATATGGCAAGATGTATCAT 1983
Db 637 rArgArgThrAlaIlePheMetCysValGlnMetGlnArgIleTrpProArgMetTrpMe 657
QY 1984 GATGCCCTTGTCAATTAATTAAGCAAAAGAGTTGAGACTTCAAAAACCTAGAGCAATGAAA 2043
Db 657 tMetProLeuCysLys-----AlaLysArgLeuGlnLeuLysAsn---LysGln---Ly 673
QY 2044 ACCCTGGCCACTTTAAAGAGAAAGAAAGCTTACTTCAAGATTTTGGTGCAT 2095
Db 673 sProTrpProLeu---LysLysLysAsnAlaThrPheArgIlePheGlnHIS 689
RESULT 7
US-09-371-347A-22
; Sequence 22: Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
```



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; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRF
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Pred. No.: 3,47e-16 Length: 682
Score: 914.00 Matches: 236
Percent Similarity: 48.30% Conservative: 119
Best Local Similarity: 32.11% Mismatches: 288
Query Match: 24.27% Indels: 92
DB: 1 Gaps: 15

us-09-371-347a-41 (1-2097) x us-09-371-347a-22 (1-682)
QY 1 ATGAGAGAGTTTCTGTTACTATGCTACACAGAGGAGCGCAAGCCATCCGAGA 60
DB 1 MethraspPheLeuIleAlaPheGlySerGlnThrGlnAlaGlnThrIleAlaLys 20
QY 61 GAATATGTCAGAGAGCTGTGTACATGATTTTCTGAGATCTTCACTGATTTAGTGA 120
DB 21 SerLeuLysGlnLysAlaGlnLeuIleGlyLeuThrProAlaGlnAlaLeuAspGlu 40
QY 121 TCCGATATGATGACCTTAACCAACAGCTCCTCTGTTGTTGGTTTCTACACAG 180
DB 41 AsnGlnLysLysPheAsnLeuAsnGlnLysLysLysAlaIleValSerSerThr 60
QY 181 GGCACCGGAGACCCACCGACACAGCCCGCAAGTTTGTAAAGAAATCAGAACCAACA 240
DB 61 GlyAspGlyAspAlaProAspAsnCyAlaArgPheValArgArgIleAsnArgAsnSer 80
QY 241 CTGCGGTTGATTTCTTGTCTCACTGCGGATGAGTTAGGCTCGGTTGATTCAGAA 300
DB 81 LeuGlnAsnGlnLysLysLysAsnLeuAsnLysPheValLeuLeuGlyLeuGlyAspSerAsn 100
QY 301 TACACCTACTTTTTCATATGGGGGAGATATTTGTAAGACCTTCAAGACCTTGGAGCC 360
DB 101 TySerSerTyArgInThrIleProArgLysIleAspLysGlnLeuThrAlaLeuGlnLysAla 120
QY 361 CGCATTTTATGACACTGACATGACATGACATGATCTGTAGTTTGAATCTTGTTGTTGAG 420
DB 121 AsnArgLeuPheAspArgAlaGlnAlaAspAspGlnValGlyLeuGlnLeuGlnValGln 140
QY 421 CCGGATGTTGCTGACTGTGCGCACCTTCAGAAAAGCATTTTAGTTCAGACAGAGACAA 480
DB 141 ProThrIleGlnLysPhePheAlaThrLeuAlaSerArgPheAspIleSerAlaAspLys 160
QY 481 GAGAGATTAAGTGGCGACCTCCGCGGATCATCATCTTGGAGAGACCTTGTG 540
DB 161 MetAsn-----AlaIleThrGlnSerSerAsnLeuLysLeuAsnGlnVal 175
QY 541 AAGTCAGAG-----CTGCTACACATTTGAATCTCAAGTCGACCTTCTGAGATTGCAT 591
DB 176 LysThrGlnGlnGlnLysLysAlaLeuLeuGlnLysArgIleGlnLysAspGlnGlnLysSerAsp 195
QY 592 GATTCAGAGAAA----- 603

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DB 196 AspGlnGlyArgGlyArgValIleGlyIleAspMetLeuIleProGlnIleTyArgPyr 215
QY 604 AAGATTTCTGAGGTTTGGAGCAAAATGCACTGACGACCAACCAATCCATGTTGTAAT 663
DB 216 ProIleLysSerLeuLeuLysGlySerGlnThrLeuSerAsnAspGlnAsnLeu----- 233
QY 664 GAAGCTTTGAGTCTCCTACCTTACCCGTTGCTGATCCC-----CGACTCTCAGAA 711
DB 234 -----ArgValProIleAlaIleProGlnProPheIleVal 244
QY 712 GCCTCTGTAATATCTGTTTACCCCA-----GATATTTACAGTACAT 759
DB 245 SerSerValSerAsnArgLysLeuProGlnLysPheThrLysLeuGlnLysPheGlnAsnLeuLys 264
QY 760 CTGACAGAGTCTCTTGGCCAGAGAGAAAGCAAGATATCTGACTTCAAGCATTCAGT 819
DB 265 LysMetProGlyValIleThrLysProPheGlnValIleValIleSerAlaGlnPheVal 284
QY 820 TTTCAGTGCATTTTCAAGAGGAGTTCACTTACTAGATGATGCAATGATGCAATGCAACT 879
DB 285 ThrAsp--ProPheSerLys-----LysIleLysThrLys 295
QY 880 CTGCTGTGAGATTTGACATTTCAAT-----ACAGACTTTTCTTATCAGCTGAGAT 933
DB 296 ArgMetIleThrValAspPheGlyAspPheIleAlaGlnLeuGlnLysPheProGlyAsp 315
QY 934 GCCTTACAGCTGATCTGCTTCAACAGTATTTGAGTACAAAGCTTCTCAAGACTG 993
DB 316 AlaIleTyPheCysValProAsnProAlaLeuGlnValAsnPheIleLeuLysArgCys 335
QY 994 CAGCTTGAAGATTAAGAGACACTGCGCTCTTTGAAAATAAGGACAGACAAAGAG 1053
DB 336 GlyValLeuAspIleAlaAspGlnGlnCysGlnLeuSerIleAsnProLysThrGlnLys 355
QY 1054 AAAGAGACTTACTTCCACCCAGCATATATCTGCGGAGATGTTCTTCCAGCTTCAATTTTACC 1113
DB 356 IleAsnIleGlnIleProGlyHisValIleLysIleThrThrLeuAsnArgIleMetPheThr 375
QY 1114 TGGTGTCTGTAATCCAGACATTTCTTAAAGGACATTTTTCGAGCCCTTGTGACTAT 1173
DB 376 ThrCysLeuAspIleLeuArgAlaProGlyArgProLeuIleArgValLeuAlaGlnLys 395
QY 1174 ACCAGTACAGCTGCTGAAGAGGAGCTTACAGAGCTGTCAGATTAACAGGGGAGACC 1233
DB 396 ThrSerAspProAsnGlnLysArgArgLeuLeuGlnLysSerAlaGlnGlyMetLys 415
QY 1234 GATTATAGCCGCTTGTATGACGATGCTGCTGCTGTTGATTCCTCTGCTGCTTC 1293
DB 416 AspPheThrAspPheValArgThrProGlyLeuSerLeuAlaAspMetLeuPheAlaPhe 435
QY 1294 CTTTCTTTCAGACCCAGCATCTGCTCTGCTGCAAGACTTCTTAACTTCAACCCAGCA 1353
DB 436 ProAsnValLysProProValAspArgLeuIleGlnLeuLeuProArgLeuIleProArg 455
QY 1354 CCATATTCGTGTGCAAGCTCAAGTTTATTTACCCAGAGAAAGCTCCATTTTGTCTTCAAC 1413
DB 456 ProTySerMetSerSer-----TyroIleAsnArgLysAlaArgLeuIleTySer 472
QY 1414 ATTGTGGAATTTCTGTACTATGCAACAACAGAGGTTCTCGGAGAGGATGTATGTAAGGC 1473
DB 473 GlnMetGlnPheProAlaThrAspGlyArgArgIleSerArgLysGlyLeuAlaThrAsp 492
QY 1474 TGGCTGCGCTTGTGTTGCTTCAAGTTCTTCAAGCAACATATGCAATCCATGAAAGAC 1533
DB 493 TrpLeuAsnSerLeu----- 497
QY 1534 AGCGGAAAGCCCTGCTCTTAAGATATTCATCTCTCGAACAACAAATTTCTTTCAC 1593
DB 498 -----ArgIleGlyAspLysValGlnValLeuGlnLysGlnProAlaArgPheArg 514
QY 1594 TTACCA-----GATGACCCCTCAATCCCATCATATGATGTTGGT 1632

```







```

Pred. No.: 0.85 Length: 29
Score: 158.00 Matches: 29
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 4.20% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-54 (1-29)
QY 259 GCTACTGGCGTATGGGTTACTGGGTTCTCGGTATTCAGAAATACACCTTCTTGCAT 318
Db 1 AAtHsIeuArYrGlyLeuGlyLeuGlyAspserGIuYrThrTyPheCyAsn 20
QY 319 GGGGGAAGATTAATTGATTAACGACTT 345
Db 21 GlyGIuYsIleIleAspLysAlrGlu 29

RESULT 11
US-09-371-347a-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-58

Alignment Scores:
Pred. No.: 6.3 Length: 22
Score: 117.00 Matches: 22
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 3.11% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-58 (1-22)
QY 1612 ATCCCATCAATATGATGGTCCAGAACCGCATACCCGGTTATGGGTTCTTCAAA 1671
Db 1 IlleIleIleIleMetValGIyProGIyThrcIyIleIleIleProPheIleGIyPheLeuGIln 20
QY 1672 CATAGA 1677
Db 21 HisArg 22

RESULT 12
US-09-371-347a-53
; Sequence 53, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
```

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; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 53
; LENGTH: 23
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-53

Alignment Scores:
Pred. No.: 6.32 Length: 23
Score: 116.00 Matches: 23
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 3.08% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-53 (1-23)
QY 160 GTTGTGGTGTCTTCTACAGGGGACCGGAGCCAGCCAGACGCGGAGTTGTT 219
Db 1 ValValAlaValserThrThrGlyAlaAspProAspThrAlaArgLysPheVal 20
QY 220 AAGGAATA 228
Db 21 LysGluIle 23

RESULT 13
US-09-371-347a-25
; Sequence 25, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 25
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-25

Alignment Scores:
Pred. No.: 10.6 Length: 18
Score: 109.00 Matches: 18
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 2.89% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-25 (1-18)
QY 1714 GAGCAATGTGGTGTGTTTGGCTGAGCATAPAGATAGGATTAATCTATTC 1767
```

```

Db      1  G1yAlaMetCTrPLeuPheGhG1yCyArgh1sLysAspArGApTyLLeuPhe 18

RESULT 14
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.:      12.5      Length:      19
Score:          104.00    Matches:      19
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    2.76%    Indels:      0
DB:             1       Gaps:          0

us-09-371-347a-41 (1-2097) x US-09-371-347A-55 (1-19)
Qy      1342  CTTCAACCCAGACCATATTCGTGTGCAAGCTCAAGTTATTTCACCCAGAAAGCTC 1398
Db      1  LeuclnProAqPrtOrySeScyAlaSerSerLeuPheHisProGlyLysLeu 19

RESULT 15
US-09-371-347A-52
; Sequence 52, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 52
; LENGTH: 20
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:      16.7      Length:      20
Score:          96.00    Matches:      19

```

[illegible]



```
Db 515 upProLeuclYmethylYsaSnsSerAlaGlyLysLeuProLeuLeuMetValGlyPr 535
      |||::: |||
      :|:|:|
Qy 152 -----GCTTTTCGTTTTCAGTCTACTTA----- 126
      |||:::|
      :|:|:|
Db 535 oglyThrGlyValSerValPheLeuSerPheLeuArgLysLeuLysGlnAs 555
      |||:::|
      :|:|:|
Qy 125 -----TCGGA-TTCACCTATACAGTGAAGATC-----TGCAGAAATCC-- 88
      |||:::|
      :|:|:|
Db 555 pSerProSerAspPheValAspValProArgValLeuPheGlyCysArgAspSerSe 575
      |||:::|
      :|:|:|
Qy 87 -----ATGTACACAGCTTGTCTCAGCATATTCTTCGAGATGGCTTTCCTGTC 38
      |||:::|
      :|:|:|
Db 575 rValAspAlaIleuTyMetSerGluLeuGluMetPheValSerGluGlyIleLeuThrAs 595
      |||:::|
      :|:|:|
Qy 37 CCTGCTG 31
      |||:::|
      :|:|:|
Db 595 pleuile 597

RESULT 19
US-09-371-347A-34
; Sequence 34, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-34

Alignment Scores:
Pred. No.: 76 Length: 18
Score: 61.00 Matches: 10
Percent Similarity: 72.22% Conservative: 3
Best Local Similarity: 55.56% Mismatches: 5
Query Match: 1.62% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-41 (1-2097) x US-09-371-347A-34 (1-18)

Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCAGGCATTAAGATTAATCTATTC 1767
      |||:::|
      :|:|:|
Db 1 GlyArgMetThrLeuValPheGlyCysArgHisProGluGluAspHisLeuTy 18

RESULT 20
US-09-371-347A-35
; Sequence 35, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
```

```
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 35
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Gallus gallus
US-09-371-347A-35

Alignment Scores:
Pred. No.: 76 Length: 18
Score: 61.00 Matches: 10
Percent Similarity: 72.22% Conservative: 3
Best Local Similarity: 55.56% Mismatches: 5
Query Match: 1.62% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-41 (1-2097) x US-09-371-347A-35 (1-18)

Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCAGGCATTAAGATTAATCTATTC 1767
      |||:::|
      :|:|:|
Db 1 GlyAspMetIleLeuLeuPheGlyCysArgHisProAspMetAspHisIleTy 18

RESULT 21
US-09-371-347A-26
; Sequence 26, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 26
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-26

Alignment Scores:
Pred. No.: 85.2 Length: 18
Score: 58.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.54% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-41 (1-2097) x US-09-371-347A-26 (1-18)

Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCAGGCATTAAGATTAATCTATTC 1767
      |||:::|
      :|:|:|
Db 1 GlyGluThrLeuLeuTyTyTyGlyCysArgArgSerAspGluAspTyTyLeuTy 18

RESULT 22
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:
```

```
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30
```

```
Alignment Scores:
Pred. No.: 85.2 Length: 18
Score: 58.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.54% Indels: 0
DB: 1 Gaps: 0
```

us-09-371-347A-41 (1-2097) x US-09-371-347A-30 (1-18)

```
Oy 1714 GGAGCAATGCTGTTTGGCTGCAGCATTAAGATAGGATATCTATTC 1767
Db 1 G1yArGthrVal1leuPhepeglyCyArGlySerApGluAspPheLeuYr 18
```

```
RESULT 23
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiocapsa roseopersicina
US-09-371-347A-38
```

```
Alignment Scores:
Pred. No.: 88.4 Length: 18
Score: 57.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.51% Indels: 0
DB: 1 Gaps: 0
```

us-09-371-347A-41 (1-2097) x US-09-371-347A-38 (1-18)

```
Oy 1714 GGAGCAATGCTGTTTGGCTGCAGCATTAAGATAGGATATCTATTC 1767
Db 1 G1yArGsn1rPleu1ePhepeglyAsnArGHisPheHisArGAspPheLeuYr 18
```

```
RESULT 24
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32
```

```
Alignment Scores:
Pred. No.: 95.2 Length: 18
Score: 55.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.46% Indels: 0
DB: 1 Gaps: 0
```

us-09-371-347A-41 (1-2097) x US-09-371-347A-32 (1-18)

```
Oy 1714 GGAGCAATGCTGTTTGGCTGCAGCATTAAGATAGGATATCTATTC 1767
Db 1 G1yArGwetrh1euValPheglyCyArGArGPrAspGluAspHis1leYr 18
```

```
RESULT 25
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29
```

```
Alignment Scores:
Pred. No.: 98.8 Length: 18
Score: 54.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.43% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-29 (1-18)

QY 1714 GGAGCAATGCTGTTGTTGGCTGCAGCATTAAGATAGGATTATCTATTC 1767
Db 1 GlycylalaleuPhepGlyCysArgSargSerGlnMetAspPheIleTyr 18

RESULT 26
US-09-371-347a-28
; Sequence 28, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Drosophila melanogaster
US-09-371-347a-28

Alignment Scores:
Pred. No.: 102 Length: 18
Score: 53.00 Matches: 8
Percent Similarity: 66.67% Conservative: 4
Best Local Similarity: 44.44% Mismatches: 6
Query Match: 1.41% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-28 (1-18)

QY 1714 GGAGCAATGCTGTTGTTGGCTGCAGCATTAAGATAGGATTATCTATTC 1767
Db 1 GlycylserIleleuTyrPheGlyCysArgGlySargSerGlnAspTyrIleTyr 18

RESULT 27
US-09-371-347a-61
; Sequence 61, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
```

```
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 61
; LENGTH: 9
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-61

Alignment Scores:
Pred. No.: 721 Length: 9
Score: 51.00 Matches: 9
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-61 (1-9)

QY 2068 AACGCTACCTTCAGATATTGTC 2094
Db 1 LysArgTyrLeuGlnAspIleTyrSer 9

RESULT 28
US-09-371-347a-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347a-36

Alignment Scores:
Pred. No.: 110 Length: 18
Score: 51.00 Matches: 9
Percent Similarity: 61.11% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 7
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-36 (1-18)

QY 1714 GGAGCAATGCTGTTGTTGGCTGCAGCATTAAGATAGGATTATCTATTC 1767
Db 1 GlycylsantIrpLeuPhepGlyAsnProHisPheThrGlnAspPheIleTyr 18

RESULT 29
US-09-371-347a-37
; Sequence 37, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
```

```

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 37
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Saccharomyces cerevisiae
US-09-371-347A-37

Alignment Scores:
Pred. No.: 110          Length: 18
Score: 51.00           Matches: 8
Percent Similarity: 72.22%      Conservative: 5
Best Local Similarity: 44.44%    Mismatches: 5
Query Match: 1.35%             Indels: 0
DB: 1                       Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-37 (1-18)

QY 1714 GGAGCAATGCTGTTGTTTGGCTGACGATAGGATATATCTATTC 1767
Db 1 GlycyluValPheLeuTyLeuGlySerArgHisIysArgIuGluTyLeuTy 18

RESULT 30
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 4.23          Length: 689
Score: 50.00           Matches: 23
Percent Similarity: 39.33%      Conservative: 12
Best Local Similarity: 25.84%    Mismatches: 38
Query Match: 1.34%             Indels: 17
DB: 1                       Gaps: 2

us-09-371-347a-41 (1-2097) x US-09-371-347A-48 (1-689)

QY 1894 GAAGCTGAGATGTTGCTTGTACATACACTTGTGGGCTCTCTCCCAACAGAGCAT 1835
Db 418 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 437
```

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QY 1834 CTCTTGAGAGAAACCTTAGATAGATTAGATCCCATGCTTAAGAAATGCTGAGCT 1775
Db 438 SerLeuLeuLeuGlnHisLeuProIysLeuGln----- 448
QY 1774 CTCTTGAGATAGATATCCCTATCTTATGCTGACGCCAAAAACAAACA--CATTGC 1717
Db 449 -----ProArgProTySerCysAlaSerSerLeuPheHisPro 462
QY 1716 TCCAAAATTCACATCGGCTGTTGTTCTTGAGATTTCTCTCT--AGTTGTAGAAACC 1660
Db 463 GlyLysLeuHisIspheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 482
QY 1659 AATTAACGGGCTATGCCGCTCTCGG 1633
Db 483 LeuArgIysGlyValCysThrGlyTyr 491

RESULT 31
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.: 4.18          Length: 697
Score: 50.00           Matches: 23
Percent Similarity: 39.33%      Conservative: 12
Best Local Similarity: 25.84%    Mismatches: 38
Query Match: 1.34%             Indels: 17
DB: 1                       Gaps: 2

us-09-371-347a-41 (1-2097) x US-09-371-347A-46 (1-697)

QY 1894 GAAGCTGAGATGTTGCTTGTACATACACTTGTGGGCTCTCTCCCAACAGAGCAT 1835
Db 419 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
QY 1834 CTCTTGAGAGAAACCTTAGATAGATTAGATCCCATGCTTAAGAAATGCTGAGCT 1775
Db 439 SerLeuLeuLeuGlnHisLeuProIysLeuGln----- 449
QY 1774 CTCTTGAGATAGATATCCCTATCTTATGCTGACGCCAAAAACAAACA--CATTGC 1717
Db 450 -----ProArgProTySerCysAlaSerSerLeuPheHisPro 463
QY 1716 TCCAAAATTCACATCGGCTGTTGTTCTTGAGATTTCTCTCT--AGTTGTAGAAACC 1660
Db 464 GlyLysLeuHisIspheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 483
QY 1659 AATTAACGGGCTATGCCGCTCTCGG 1633
Db 484 LeuArgIysGlyValCysThrGlyTyr 492
```



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RESULT 32
US-09-371-347A-2
; Sequence 2, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 2
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-2

Alignment Scores:
Pred. No.: 4.18 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

us-09-371-347A-41 (1-2097) x US-09-371-347A-2 (1-698)
QY 1894 GAAGCTGATGTTGTTGTACATACCTTGGGGGCTTCTCTCCCAACAGAGCAT 1835
Db 419 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
QY 1834 CTCTTGAGAGGAACCTTATGATGATTAAGATCCCATGCTTAAGAAATGCTGAGCT 1775
Db 439 SerLeuLeuLeuGlnHisLeuProLysLeuGln----- 449
QY 1774 CTTTTCGATAGATTAATCCCTATGCTTATGCTGAGCCAAAAACAACA--CATTCG 1717
Db 450 -----ProArgProTyrSerCysAlaSerSerSerLeuPheHisPro 463
QY 1716 TCCAAAATTTCCATCTGGGCTGTGTTCTTGAGAGTTCTCTCT--ATGTTGAGAACCC 1660
Db 464 GlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThrGluVal 483
QY 1659 AATAACGGGGCTATGCCGGTTCCTGG 1633
Db 484 LeuArgLysGlyValCysThrGlyTyr 492

RESULT 33
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
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; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 4.18 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

us-09-371-347A-41 (1-2097) x US-09-371-347A-21 (1-698)
QY 1894 GAAGCTGATGTTGTTGTACATACCTTGGGGGCTTCTCTCCCAACAGAGCAT 1835
Db 419 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
QY 1834 CTCTTGAGAGGAACCTTATGATGATTAAGATCCCATGCTTAAGAAATGCTGAGCT 1775
Db 439 SerLeuLeuLeuGlnHisLeuProLysLeuGln----- 449
QY 1774 CTTTTCGATAGATTAATCCCTATGCTTATGCTGAGCCAAAAACAACA--CATTCG 1717
Db 450 -----ProArgProTyrSerCysAlaSerSerSerLeuPheHisPro 463
QY 1716 TCCAAAATTTCCATCTGGGCTGTGTTCTTGAGAGTTCTCTCT--ATGTTGAGAACCC 1660
Db 464 GlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThrGluVal 483
QY 1659 AATAACGGGGCTATGCCGGTTCCTGG 1633
Db 484 LeuArgLysGlyValCysThrGlyTyr 492

RESULT 34
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-42

Alignment Scores:
Pred. No.: 4.18 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
```



```

: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-23

Alignment Scores:
Pred. NO.: 4.43 Length: 677
Score: 49.00 Matches: 20
Percent Similarity: 45.12% Conservative: 17
Best Local Similarity: 24.39% Mismatches: 27
Query Match: 1.31% Indels: 18
DB: 1 Gaps: 4

us-09-371-347a-41 (1-2097) x US-09-371-347A-23 (1-677)
QY 695 ACCGACGGGTAGTAGGAGGACTCAAGTCTTCATTACACAGATTGGTGTGCTTC 636
Db :||| |||::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|
13 SerGuaIaValaIaGlUglU---ValSerLeuPheSerMetThrAspMetIleuPhe 31
QY 635 ACTGCA-----TTTGCTCCAAACCTCAGATNCCTTCTT 600
Db :||| |||::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|
32 SerIleuIleValIglyLeuLeuThrTyrTrpPheLeuPheArgLysLysIleGlUval 51
QY 599 CCTGAATCATCGAATCTCAGAAAGCTCGACTTGAGATTGAATGTAGACAGCTCGACTTC 540
Db |||||::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|
52 ProGluPheThrLysIleGlnThrLeuThr-----SerSerValArgGluSerSerPhe 69
QY 539 ACA-----AGGTCTGTCTCAGAGATGACGATGATGCACCGGG 501
Db 70 ValGluLysMetLysLysThrGlyArgGluIleIleValPheTyrGlySerGlnThrGly 89
QY 500 AGTCGG 495
Db :||| |||::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|
90 ThrAla 91

RESULT 38
US-09-371-347A-33
: Sequence 33, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: FILE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FASTSEQ for Windows Version 4.0
: SEQ ID NO 33
: LENGTH: 18
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-33

Alignment Scores:
Pred. NO.: 150 Length: 18
Score: 42.00 Matches: 8
Percent Similarity: 62.50% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.12% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-33 (1-18)
QY 1720 ATGTGCTGTTTGGCTGCGAGCATAGGATAGGATATATCTATTC 1767
||| ||| |||||::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|::|

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```

Db      3 MetValIeuValPheGlyCysArgCysSerGlnLeuAspHisLeuTyr 18

RESULT 39
US-09-371-347A-31
; Sequence 31, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: US/09/371.347A
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 31
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-31

Alignment Scores:
Pred. No.:          160           Length:          18
Score:              40.00         Matches:          7
Percent Similarity: 62.50%        Conservative:    3
Best Local Similarity: 43.75%     Mismatches:     6
Query Match:        1.06%         Indels:          0
DB:                 1            Gaps:             0

us-09-371-347A-41 (1-2097) x US-09-371-347A-31 (1-18)
Qy      1720 ATGTGGTTGTTTTTGCTGCAGCATAAAGATAGGATATTCATTTC 1767
       ||| ||| ||||| ||||| ||| ||| ||| ||| ||| ||| ||| |||
Db      3 MetValIeuValPheGlyCysArgGlnSerLysrIleAspHisLeuTyr 18

RESULT 40
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: US/09/371.347A
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-08-10
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.:          180           Length:          19
Score:              34.50         Matches:          7

```

Percent Similarity: 50.00% Conservative: 3  
Best Local Similarity: 35.00% Mismatches: 5  
Query Match: 0.92% Indels: 5  
DB: 1 Gaps: 1

us-09-371-347a-41 (1-2097) x us-09-371-347a-55 (1-19)

QY 1756 CCTATCCTATGCTGACGCAAAAACACCATGCTCAAAATTCATCTGGGT 1697  
DB 3 ProArgProTyrSerCysAlaSerSerSerIleu-----PheHisProGly 17

RESULT 41  
US-09-371-347a-39

; Sequence 39, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 39

; LENGTH: 19

; TYPE: PRT

; ORGANISM: Pisum sativum

US-09-371-347a-39

Alignment Scores:

Pred. No.: 183 Length: 19

Score: 34.00 Matches: 6

Percent Similarity: 53.85% Conservative: 1

Best Local Similarity: 46.15% Mismatches: 6

Query Match: 0.90% Indels: 0

DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x us-09-371-347a-39 (1-19)

QY 1714 GGAGCAATGTGTTGTTTGGCTGACGCAATAGAGAT 1752

DB 1 GlyLeuAlaTrpLeuPheLeuGlyValAlaSerValasp 13

RESULT 42  
US-09-371-347a-60

; Sequence 60, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 60  
; LENGTH: 41  
; TYPE: PRT  
; ORGANISM: Homo sapiens  
US-09-371-347a-60

Alignment Scores:

Pred. No.: 95 Length: 41

Score: 32.00 Matches: 7

Percent Similarity: 61.11% Conservative: 4

Best Local Similarity: 38.89% Mismatches: 7

Query Match: 0.86% Indels: 0

DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x us-09-371-347a-60 (1-41)

QY 112 TACAGTGAAGATGTCGAGAAATCCATGTCCACAGCTTGCTCAATATTTCTT 59

DB 5 TyrValGlnAspAsnIleGlnLeuHsGlyGlnGlnValAlaArgIleLeu 22

RESULT 43  
US-09-371-347a-40

; Sequence 40, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 40

; LENGTH: 18

; TYPE: PRT

; ORGANISM: Spinacia oleracea

US-09-371-347a-40

Alignment Scores:

Pred. No.: 209 Length: 18

Score: 31.00 Matches: 5

Percent Similarity: 62.50% Conservative: 0

Best Local Similarity: 62.50% Mismatches: 3

Query Match: 0.82% Indels: 0

DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x us-09-371-347a-40 (1-18)

QY 1714 GGAGCAATGTGTTGTTTGGC 1737

DB 1 GlyLeuAlaTrpLeuPheLeuGly 8

RESULT 44  
US-09-371-347a-36

; Sequence 36, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

```

; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347A-36

```

```

Alignment Scores:
Pred. No.: 214          Length: 18
Score: 30.00           Matches: 4
Percent Similarity: 85.71% Conservative: 2
Best Local Similarity: 57.14% Mismatches: 1
Query Match: 0.80%      Indels: 0
DB: 1                  Gaps: 0

```

us-09-371-347a-41 (1-2097) x US-09-371-347A-36 (1-18)

```

QY      1967 ATATTCTTGATCTCCACAC 1947
DB      5 LeuPhepGlyAsnProHis 11

```

RESULT 45

```

US-09-371-347A-59
; Sequence 59, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 59
; LENGTH: 6
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-59

```

```

Alignment Scores:
Pred. No.: 1.08e+03      Length: 6
Score: 29.00           Matches: 6
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.77%      Indels: 0
DB: 1                  Gaps: 0

```

us-09-371-347a-41 (1-2097) x US-09-371-347A-59 (1-6)

```

QY      1822 TCCTTCTCAGAGATGCT 1839
DB      1 SerPheSerArgAspAla 6

```

Search completed: May 9, 2005, 15:30:35  
 Job time : 27 secs

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GenCore version 5.1.6  
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OM protein - protein search, using sw model

Run on: May 9, 2005, 15:25:29 ; Search time 1 Second  
(without alignments)  
4.206 Million cell updates/sec

Title: us-09-371-347A-2  
Perfect score: 3624  
Sequence: 1 MRRFLLYATQOGAKAIAE.....AMKTLATLKEEKRYLQDIWS 698

Scoring table: BLOSUM62  
Gap 10.0 , Gapext 0.5

Searched: 34 seqs, 6026 residues

Total number of hits satisfying chosen parameters: 34

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

Database : US09371347A.pep:\*

Pred. No. is the number of results predicted by chance to have a  
score greater than or equal to the score of the result being printed,  
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	3624	100.0	698	1 US-09-371-347A-2	Sequence 2, App1
2	3624	100.0	698	1 US-09-371-347A-21	Sequence 21, App1
3	3620	99.9	698	1 US-09-371-347A-42	Sequence 42, App1
4	3614	99.7	698	1 US-09-371-347A-44	Sequence 44, App1
5	3609.5	99.6	697	1 US-09-371-347A-46	Sequence 46, App1
6	2883	79.6	689	1 US-09-371-347A-48	Sequence 48, App1
7	914	25.2	682	1 US-09-371-347A-22	Sequence 22, App1
8	731.5	20.2	677	1 US-09-371-347A-23	Sequence 23, App1
9	215	5.9	41	1 US-09-371-347A-60	Sequence 60, App1
10	158	4.4	29	1 US-09-371-347A-54	Sequence 54, App1
11	117	3.2	22	1 US-09-371-347A-58	Sequence 58, App1
12	116	3.2	23	1 US-09-371-347A-53	Sequence 53, App1
13	109	3.0	18	1 US-09-371-347A-25	Sequence 25, App1
14	104	2.9	19	1 US-09-371-347A-55	Sequence 55, App1
15	100	2.8	20	1 US-09-371-347A-52	Sequence 52, App1
16	87	2.4	17	1 US-09-371-347A-57	Sequence 57, App1
17	68	1.9	14	1 US-09-371-347A-56	Sequence 56, App1
18	61	1.7	18	1 US-09-371-347A-34	Sequence 34, App1
19	61	1.7	18	1 US-09-371-347A-35	Sequence 35, App1
20	58	1.6	18	1 US-09-371-347A-26	Sequence 26, App1
21	58	1.6	18	1 US-09-371-347A-30	Sequence 30, App1
22	57	1.6	18	1 US-09-371-347A-38	Sequence 38, App1
23	55	1.5	18	1 US-09-371-347A-32	Sequence 32, App1
24	54	1.5	18	1 US-09-371-347A-29	Sequence 29, App1
25	53	1.5	18	1 US-09-371-347A-28	Sequence 28, App1
26	51	1.4	9	1 US-09-371-347A-61	Sequence 61, App1
27	51	1.4	18	1 US-09-371-347A-37	Sequence 37, App1
28	51	1.4	18	1 US-09-371-347A-27	Sequence 27, App1
29	49	1.4	18	1 US-09-371-347A-33	Sequence 33, App1
30	42	1.2	18	1 US-09-371-347A-31	Sequence 31, App1
31	40	1.1	18	1 US-09-371-347A-39	Sequence 39, App1
32	34	0.9	19	1 US-09-371-347A-40	Sequence 40, App1
33	31	0.9	18	1 US-09-371-347A-40	Sequence 40, App1

ALIGNMENTS

34	29	0.8	6	1	US-09-371-347A-59	Sequence 59, App1
RESULT 1						
US-09-371-347A-2						
Sequence 2, Application US/09371347A						
GENERAL INFORMATION:						
APPLICANT: Gravel, Roy A,						
APPLICANT: Rozen, Rima						
APPLICANT: Leclerc, Daniel						
APPLICANT: Wilson, Aaron						
APPLICANT: Rosenblatt, David						
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.						
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE						
FILE REFERENCE: 50004/003003						
CURRENT APPLICATION NUMBER: US/09/371.347A						
CURRENT FILING DATE: 1999-08-10						
PRIOR APPLICATION NUMBER: 09/232,028						
PRIOR FILING DATE: 1999-01-15						
PRIOR APPLICATION NUMBER: 60/071,622						
PRIOR FILING DATE: 1998-01-16						
NUMBER OF SEQ ID NOS: 61						
SOFTWARE: FastSeq for Windows Version 4.0						
SEQ ID NO 2						
LENGTH: 698						
TYPE: PRT						
ORGANISM: Homo sapiens						
US-09-371-347A-2						
Query Match						
Best Local Similarity 100.0%; Score 3624; DB 1; Length 698;						
Matches 698; Conservative 0; Mismatches 0; Indels 0; Gaps 0;						

Qy	1	MRRFLLYATQOGAKAIAEEMCEAVVHGFSADLHCISESDKYDLKTEAPLVVVSST	60
Db	1	MRRFLLYATQOGAKAIAEEMCEAVVHGFSADLHCISESDKYDLKTEAPLVVVSST	60
Qy	61	GTGDPPTARKFVEEIONOTLPVDFALRYGLIGLDBSEYTFQNGKKI1DKLQELGA	120
Db	61	GTGDPPTARKFVEEIONOTLPVDFALRYGLIGLDBSEYTFQNGKKI1DKLQELGA	120
Qy	121	RHFYDTGHADDCVGLBEVPEWINGLMPALRKHFRSSRGCEISGALPVASPASLRDTLV	180
Db	121	RHFYDTGHADDCVGLBEVPEWINGLMPALRKHFRSSRGCEISGALPVASPASLRDTLV	180
Qy	181	KSELHIESQVEILRPDSDGRKQSEVLKONAVNSQSNVTEDESSLTRVPLSQASL	240
Db	181	KSELHIESQVEILRPDSDGRKQSEVLKONAVNSQSNVTEDESSLTRVPLSQASL	240
Qy	241	NIPFLPEVYLQVHLQESLQGEESQVTSADPVQFVPSKAVQULTTNDAIKTTLLVEIDI	300
Db	241	NIPFLPEVYLQVHLQESLQGEESQVTSADPVQFVPSKAVQULTTNDAIKTTLLVEIDI	300
Qy	301	SNTDFSYQPDGAFSVCIPNSDSEVOISLQRLQLEDKKEHCYLLKIKADTKKKGATLPQHI	360
Db	301	SNTDFSYQPDGAFSVCIPNSDSEVOISLQRLQLEDKKEHCYLLKIKADTKKKGATLPQHI	360
Qy	361	PAGSLQIFTWCEIFRIPKARLALVNTSASAKRRLQELCSQAGADYRFPVADA	420
Db	361	PAGSLQIFTWCEIFRIPKARLALVNTSASAKRRLQELCSQAGADYRFPVADA	420
Qy	421	CACLDLILAFPSQOPPLSLLEHLPKLOPRPYSCASSLPHPKLHFVNIVEFLSTAT	480
Db	421	CACLDLILAFPSQOPPLSLLEHLPKLOPRPYSCASSLPHPKLHFVNIVEFLSTAT	480
Qy	481	TEVIRKQVCTGWLALVAVSLQPNITASHEDSGKALPKTISISRTTNSFHLPPDPSP1PI	540
Db	481	TEVIRKQVCTGWLALVAVSLQPNITASHEDSGKALPKTISISRTTNSFHLPPDPSP1PI	540

```
QY 541 IMVPGTGIAPFIFGLOHREKLOEOPHDGNGFAMWLFFGCRHKDRDYLFRKELRHF.LKHG 600
Db 541 IMVPGTGIAPFIFGLOHREKLOEOPHDGNGFAMWLFFGCRHKDRDYLFRKELRHF.LKHG 600
QY 601 ILTLKVSFSDAPVGESEAPAKYVDNIQLHGQOVARILLJENGHIYVCGDAKNMAKV 660
Db 601 ILTLKVSFSDAPVGESEAPAKYVDNIQLHGQOVARILLJENGHIYVCGDAKNMAKV 660
QY 661 HDALVOIISKEVGEKLEAMKTTLATLKEEKRYLQDIWS 698
Db 661 HDALVOIISKEVGEKLEAMKTTLATLKEEKRYLQDIWS 698
```

## RESULT 2

```
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendiat, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-21
```

```
Query Match 100.0%; Score 3624; DB 1; Length 698;
Best Local Similarity 100.0%; Pred. No. 3e-11;
Matches 698; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MRRFLLIYAQOQAKAIAEMCEQAVVHGFSADLHCISSDKYDLKTEETAPLVVVSTT 60
Db 1 MRRFLLIYAQOQAKAIAEMCEQAVVHGFSADLHCISSDKYDLKTEETAPLVVVSTT 60
QY 61 GTGDDPPTARKFYKEIQNTLPVDFPAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
Db 61 GTGDDPPTARKFYKEIQNTLPVDFPAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
QY 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRRSGQEBISGALPVASPLRTDLV 180
Db 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRRSGQEBISGALPVASPLRTDLV 180
QY 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRRSGQEBISGALPVASPLRTDLV 180
Db 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRRSGQEBISGALPVASPLRTDLV 180
QY 181 KSELHIESQVELLRFPDSRKQSEVLKQNAVNSQNVITIEPESLTSVPLSQASL 240
Db 181 KSELHIESQVELLRFPDSRKQSEVLKQNAVNSQNVITIEPESLTSVPLSQASL 240
QY 181 KSELHIESQVELLRFPDSRKQSEVLKQNAVNSQNVITIEPESLTSVPLSQASL 240
Db 181 KSELHIESQVELLRFPDSRKQSEVLKQNAVNSQNVITIEPESLTSVPLSQASL 240
QY 241 NIPGLPEYIQLVHLOESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
Db 241 NIPGLPEYIQLVHLOESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
QY 241 NIPGLPEYIQLVHLOESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
Db 241 NIPGLPEYIQLVHLOESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
QY 301 SNTDFSYQPDGAFSVICPNSDSEVOSLQRLQLEDKREHCYLLKIKADTYKKGATLPQHI 360
Db 301 SNTDFSYQPDGAFSVICPNSDSEVOSLQRLQLEDKREHCYLLKIKADTYKKGATLPQHI 360
QY 301 SNTDFSYQPDGAFSVICPNSDSEVOSLQRLQLEDKREHCYLLKIKADTYKKGATLPQHI 360
Db 301 SNTDFSYQPDGAFSVICPNSDSEVOSLQRLQLEDKREHCYLLKIKADTYKKGATLPQHI 360
QY 361 PACCSLOFITWTCLETAIRKKAFLRALVDYTSASAKRRLQELCSQOQADYSRFRDA 420
Db 361 PACCSLOFITWTCLETAIRKKAFLRALVDYTSASAKRRLQELCSQOQADYSRFRDA 420
QY 361 PACCSLOFITWTCLETAIRKKAFLRALVDYTSASAKRRLQELCSQOQADYSRFRDA 420
Db 361 PACCSLOFITWTCLETAIRKKAFLRALVDYTSASAKRRLQELCSQOQADYSRFRDA 420
QY 421 CACILDLILAFSCQPLSLILLEHLPLQRPYSCASSLFHPGKLHFVNIVEFLSTAT 480
Db 421 CACILDLILAFSCQPLSLILLEHLPLQRPYSCASSLFHPGKLHFVNIVEFLSTAT 480
```

```
Db 421 CACILDLILAFSCQPLSLILLEHLPLQRPYSCASSLFHPGKLHFVNIVEFLSTAT 480
QY 481 TEYLARKVCTGMIALLVASTLOPNITASHEDSGKALPAKISIPRTNSPHLDDPSIPI 540
Db 481 TEYLARKVCTGMIALLVASTLOPNITASHEDSGKALPAKISIPRTNSPHLDDPSIPI 540
QY 541 IMVPGTGIAPFIFGLOHREKLOEOPHDGNGFAMWLFFGCRHKDRDYLFRKELRHF.LKHG 600
Db 541 IMVPGTGIAPFIFGLOHREKLOEOPHDGNGFAMWLFFGCRHKDRDYLFRKELRHF.LKHG 600
QY 601 ILTLKVSFSDAPVGESEAPAKYVDNIQLHGQOVARILLJENGHIYVCGDAKNMAKV 660
Db 601 ILTLKVSFSDAPVGESEAPAKYVDNIQLHGQOVARILLJENGHIYVCGDAKNMAKV 660
QY 661 HDALVOIISKEVGEKLEAMKTTLATLKEEKRYLQDIWS 698
Db 661 HDALVOIISKEVGEKLEAMKTTLATLKEEKRYLQDIWS 698
```

## RESULT 3

```
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendiat, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-42
```

```
Query Match 99.9%; Score 3620; DB 1; Length 698;
Best Local Similarity 99.9%; Pred. No. 3.1e-11;
Matches 697; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 1 MRRFLLIYAQOQAKAIAEMCEQAVVHGFSADLHCISSDKYDLKTEETAPLVVVSTT 60
Db 1 MRRFLLIYAQOQAKAIAEMCEQAVVHGFSADLHCISSDKYDLKTEETAPLVVVSTT 60
QY 61 GTGDDPPTARKFYKEIQNTLPVDFPAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
Db 61 GTGDDPPTARKFYKEIQNTLPVDFPAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
QY 61 GTGDDPPTARKFYKEIQNTLPVDFPAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
Db 61 GTGDDPPTARKFYKEIQNTLPVDFPAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
QY 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRRSGQEBISGALPVASPLRTDLV 180
Db 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRRSGQEBISGALPVASPLRTDLV 180
QY 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRRSGQEBISGALPVASPLRTDLV 180
Db 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRRSGQEBISGALPVASPLRTDLV 180
QY 181 KSELHIESQVELLRFPDSRKQSEVLKQNAVNSQNVITIEPESLTSVPLSQASL 240
Db 181 KSELHIESQVELLRFPDSRKQSEVLKQNAVNSQNVITIEPESLTSVPLSQASL 240
QY 181 KSELHIESQVELLRFPDSRKQSEVLKQNAVNSQNVITIEPESLTSVPLSQASL 240
Db 181 KSELHIESQVELLRFPDSRKQSEVLKQNAVNSQNVITIEPESLTSVPLSQASL 240
QY 241 NIPGLPEYIQLVHLOESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
Db 241 NIPGLPEYIQLVHLOESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
QY 241 NIPGLPEYIQLVHLOESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
Db 241 NIPGLPEYIQLVHLOESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
QY 301 SNTDFSYQPDGAFSVICPNSDSEVOSLQRLQLEDKREHCYLLKIKADTYKKGATLPQHI 360
Db 301 SNTDFSYQPDGAFSVICPNSDSEVOSLQRLQLEDKREHCYLLKIKADTYKKGATLPQHI 360
```



```

Db      301  SNTDFSYQPGDAFSVTCNSDSEVQSLLQRLQLEDKREHCYVLKTKADTKKKGATLPHQHI 360
Qy      361  PAGESLOPFTWMCLEIRAIIPKKAFLRALVDYTSDAEKRRLQELCSKOGADYSRFVDA 420
Db      361  PAGESLOPFTWMCLEIRAIIPKKAFLRALVDYTSDAEKRRLQELCSKOGADYSRFVDA 420
Qy      421  CACLLDLLAFSPSCOPPLSLLEHLPKLQPRPYSCASSSLFHPGKLAFVNIIVEFLSTAT 480
Db      421  CACLLDLLAFSPSCOPPLSLLEHLPKLQPRPYSCASSSLFHPGKLAFVNIIVEFLSTAT 480
Qy      481  TEVLRKGVCTGMLALVAVSVLQPNHASHEDSGKALAPKISISPTTNSFHLRDDPSIPI 540
Db      481  TEVLRKGVCTGMLALVAVSVLQPNHASHEDSGKALAPKISISPTTNSFHLRDDPSIPI 540
Qy      541  IMVGGTGIAPFIFGLQREKLOEQHPDNGAMWLFPGCRHKRDYLFREKELRHFLLKHG 600
Db      541  IMVGGTGIAPFIFGLQREKLOEQHPDNGAMWLFPGCRHKRDYLFREKELRHFLLKHG 600
Qy      601  ILTHLKVSFSRDAFVGESEAPAKYVDNIQLHGQOVARILLOENGHIYVCGDAKMAKDV 660
Db      601  ILTHLKVSFSRDAFVGESEAPAKYVDNIQLHGQOVARILLOENGHIYVCGDAKMAKDV 660
Qy      661  HDALVOIISKEVGEKLEAMKTLATLKEEKRYLDIWS 698
Db      661  HDALVOIISKEVGEKLEAMKTLATLKEEKRYLDIWS 698

```

## RESULT 4

```

US-09-371-347A-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Lecienc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN MENTIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-44

```

```

Query Match      99.7%; Score 3614; DB 1; Length 698;
Best Local Similarity 99.9%; Pred. No. 3.2e-11;
Matches 697; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

```

```

Qy      1  MRRFLLYATQOGAKAIAEMCEQAVVHGFSADLHCISESDKYDLKTEAPLVVVVSTT 60
Db      1  MRRFLLYATQOGAKAIAEMCEQAVVHGFSADLHCISESDKYDLKTEAPLVVVVSTT 60
Qy      61  GTGPPPTARKFVKEIONQTLPVDFPAHLRYGLGLGDSSETTYPCNGKIIIDKRLQELGA 120
Db      61  GTGPPPTARKFVKEIONQTLPVDFPAHLRYGLGLGDSSETTYPCNGKIIIDKRLQELGA 120
Qy      121  RHFYDTGHAADCVGLELVVEPMIAGLWPAKLRKHFRSSRGQEEISGALPVASPASIRTDLV 180
Db      121  RHFYDTGHAADCVGLELVVEPMIAGLWPAKLRKHFRSSRGQEEISGALPVASPASIRTDLV 180
Qy      181  KSELHIESQVELLRFPDSDGKDSVTLKONAVNSQNSVNIIEPSSILTRSVPLSQASL 240
Db      181  KSELHIESQVELLRFPDSDGKDSVTLKONAVNSQNSVNIIEPSSILTRSVPLSQASL 240

```

```

Qy      241  NIPGLPEYLOVHLOESIGQESQVTSADPVFQVPISKAVOLTNDAIKTTLLVEIDI 300
Db      241  NIPGLPEYLOVHLOESIGQESQVTSADPVFQVPISKAVOLTNDAIKTTLLVEIDI 300
Qy      301  SNTDFSYQPGDAFSVTCNSDSEVQSLLQRLQLEDKREHCYVLKTKADTKKKGATLPHQHI 360
Db      301  SNTDFSYQPGDAFSVTCNSDSEVQSLLQRLQLEDKREHCYVLKTKADTKKKGATLPHQHI 360
Qy      361  PAGESLOPFTWMCLEIRAIIPKKAFLRALVDYTSDAEKRRLQELCSKOGADYSRFVDA 420
Db      361  PAGESLOPFTWMCLEIRAIIPKKAFLRALVDYTSDAEKRRLQELCSKOGADYSRFVDA 420
Qy      421  CACLLDLLAFSPSCOPPLSLLEHLPKLQPRPYSCASSSLFHPGKLAFVNIIVEFLSTAT 480
Db      421  CACLLDLLAFSPSCOPPLSLLEHLPKLQPRPYSCASSSLFHPGKLAFVNIIVEFLSTAT 480
Qy      481  TEVLRKGVCTGMLALVAVSVLQPNHASHEDSGKALAPKISISPTTNSFHLRDDPSIPI 540
Db      481  TEVLRKGVCTGMLALVAVSVLQPNHASHEDSGKALAPKISISPTTNSFHLRDDPSIPI 540
Qy      541  IMVGGTGIAPFIFGLQREKLOEQHPDNGAMWLFPGCRHKRDYLFREKELRHFLLKHG 600
Db      541  IMVGGTGIAPFIFGLQREKLOEQHPDNGAMWLFPGCRHKRDYLFREKELRHFLLKHG 600
Qy      601  ILTHLKVSFSRDAFVGESEAPAKYVDNIQLHGQOVARILLOENGHIYVCGDAKMAKDV 660
Db      601  ILTHLKVSFSRDAFVGESEAPAKYVDNIQLHGQOVARILLOENGHIYVCGDAKMAKDV 660
Qy      661  HDALVOIISKEVGEKLEAMKTLATLKEEKRYLDIWS 698
Db      661  HDALVOIISKEVGEKLEAMKTLATLKEEKRYLDIWS 698

```

## RESULT 5

```

US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Lecienc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN MENTIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

```

```

Query Match      99.6%; Score 3609.5; DB 1; Length 697;
Best Local Similarity 99.9%; Pred. No. 3.3e-11;
Matches 697; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

```

```

Qy      1  MRRFLLYATQOGAKAIAEMCEQAVVHGFSADLHCISESDKYDLKTEAPLVVVVSTT 60
Db      1  MRRFLLYATQOGAKAIAEMCEQAVVHGFSADLHCISESDKYDLKTEAPLVVVVSTT 60
Qy      61  GTGPPPTARKFVKEIONQTLPVDFPAHLRYGLGLGDSSETTYPCNGKIIIDKRLQELGA 120
Db      61  GTGPPPTARKFVKEIONQTLPVDFPAHLRYGLGLGDSSETTYPCNGKIIIDKRLQELGA 120

```

```
QY 121 RHFYDTGHADDCVGLLELVEPWIAGLWPALEKRRSSRGGEISGALPVASPASLRDTLV 180
Db 121 RHFYDTGHADDCVGLLELVEPWIAGLWPALEKRRSSRGGEISGALPVASPASLRDTLV 180
QY 181 KSELHIESQVELLRFPDSSGRKSEVYLKQANVNSQSNVTEDESSLTSSVPLSQASL 240
Db 181 KSELHIESQVELLRFPDSSGRKSEVYLKQANVNSQSNVTEDESSLTSSVPLSQASL 240
QY 241 NIPGLPEYLOVHLOESLQGESQSVTSADPVQVPSKAVOLTTNDALKTTLVLELDI 300
Db 241 NIPGLPEYLOVHLOESLQGESQSVTSADPVQVPSKAVOLTTNDALKTTLVLELDI 300
QY 301 SNTDFSYQPGDAFVIPCNSDSEVQSLLQRLQLEDKKEHCVLTKIKADTKKKGATLPPQHI 360
Db 301 SNTDFSYQPGDAFVIPCNSDSEVQSLLQRLQLEDKKEHCVLTKIKADTKKKGATLPPQHI 360
QY 361 PAGCSLOPFTWCLLEIRAIIPKKAFLRALVDYTSASAEKRRLOELCSKQGAADYSRFPVDA 420
Db 361 PAGCSLOPFTWCLLEIRAIIPKKAFLRALVDYTSASAEKRRLOELCSKQGAADYSRFPVDA 420
QY 421 CACLLDLILAFSPCOPPLSLLEHLPLQPPRYSCASSLPHPGKLFHVENIVEFLSTAT 480
Db 421 CACLLDLILAFSPCOPPLSLLEHLPLQPPRYSCASSLPHPGKLFHVENIVEFLSTAT 480
QY 481 TEVLARKGVCTGWLALLVASVLOPNIHASHEDSGKALPKTISISPTTNSFHLPPDPSIPI 540
Db 481 TEVLARKGVCTGWLALLVASVLOPNIHASHEDSGKALPKTISISPTTNSFHLPPDPSIPI 540
QY 541 IMVPGGCIAPFIQFLQHRLELOQHPDGNFGAMWLPPGCRHKRDYLPFKELRHFLKRG 600
Db 541 IMVPGGCIAPFIQFLQHRLELOQHPDGNFGAMWLPPGCRHKRDYLPFKELRHFLKRG 600
QY 601 ILTHLTKSFSRDAVGESEAPAKYVQDNILQHGQVARIILQENGHLYVGDADAKMAKDV 660
Db 601 ILTHLTKSFSRDAVGESEAPAKYVQDNILQHGQVARIILQENGHLYVGDADAKMAKDV 660
QY 661 HDALVQIISKEVGEKLEAMKTALTLKEKRYLODINS 698
Db 660 HDALVQIISKEVGEKLEAMKTALTLKEKRYLODINS 697
```

```
RESULT 6
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371, 347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232, 028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071, 622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-48
```

```
Query Match 79.6%; Score 2883; DB 1; Length 689;
Best Local Similarity 100.0%; Pred. No. 1; le-08;
Matches 558; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY 2 RRFLLYATQOGAKAIAEEMCEQAVVHGFSADLHCISESDKYDLKTETAPLVVVVSTTG 61
```

```
Db 1 RRFLLYATQOGAKAIAEEMCEQAVVHGFSADLHCISESDKYDLKTETAPLVVVVSTTG 60
QY 62 TGPDPDARKEVFEIONQTLVPDFAHLRYGLIGDSEYTYCNGGKIIDKLOELGAR 121
Db 62 TGPDPDARKEVFEIONQTLVPDFAHLRYGLIGDSEYTYCNGGKIIDKLOELGAR 120
QY 122 HFYDTGHADDCVGLLELVEPWIAGLWPALEKRRSSRGGEISGALPVASPASLRDTLV 181
Db 122 HFYDTGHADDCVGLLELVEPWIAGLWPALEKRRSSRGGEISGALPVASPASLRDTLV 180
QY 181 SELHIESQVELLRFPDSSGRKSEVYLKQANVNSQSNVTEDESSLTSSVPLSQASLN 240
Db 181 SELHIESQVELLRFPDSSGRKSEVYLKQANVNSQSNVTEDESSLTSSVPLSQASLN 240
QY 242 IPGLPPEYLOVHLOESLQGESQSVTSADPVQVPSKAVOLTTNDALKTTLVLELDIS 301
Db 242 IPGLPPEYLOVHLOESLQGESQSVTSADPVQVPSKAVOLTTNDALKTTLVLELDIS 300
QY 302 NTFPSYQPGDAFVIPCNSDSEVQSLLQRLQLEDKKEHCVLTKIKADTKKKGATLPPQHI 361
Db 302 NTFPSYQPGDAFVIPCNSDSEVQSLLQRLQLEDKKEHCVLTKIKADTKKKGATLPPQHI 360
QY 362 AGCSLOPFTWCLLEIRAIIPKKAFLRALVDYTSASAEKRRLOELCSKQGAADYSRFPVDA 421
Db 362 AGCSLOPFTWCLLEIRAIIPKKAFLRALVDYTSASAEKRRLOELCSKQGAADYSRFPVDA 420
QY 422 ACCLDLILAFSPCOPPLSLLEHLPLQPPRYSCASSLPHPGKLFHVENIVEFLSTAT 481
Db 422 ACCLDLILAFSPCOPPLSLLEHLPLQPPRYSCASSLPHPGKLFHVENIVEFLSTAT 480
QY 482 EVLRKGVCTGWLALLVASVLOPNIHASHEDSGKALPKTISISPTTNSFHLPPDPSIPI 541
Db 482 EVLRKGVCTGWLALLVASVLOPNIHASHEDSGKALPKTISISPTTNSFHLPPDPSIPI 540
QY 542 MVPGGCIAPFIQFLQHR 559
Db 541 MVPGGCIAPFIQFLQHR 558
```

```
RESULT 7
US-09-371-347A-22
; Sequence 22, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371, 347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232, 028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071, 622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRT
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22
```

```
Query Match 25.2%; Score 914; DB 1; Length 682;
Best Local Similarity 32.1%; Pred. No. 0.073;
Matches 236; Conservative 119; Mismatches 288; Indels 92; Gaps 15;
```

```
QY 1 MRFLLYATQOGAKAIAEEMCEQAVVHGFSADLHCISESDKYDLKTETAPLVVVVSTT 60
```

```

Db 1 MTDELIAGSQTGAETIAKSLKEKAEILGTPRLHALDENKKNLEKLCALIVASST 60
Qy 61 GTGDPPTARKFVEIENQTLVPDFPAHLRYGLIGDSEYTYPCNGKIIDKRLQELGA 120
Db 61 GDGAPDNCACAFVRINRNSLENEYLKNLDYVLGLGSGNSSTYOTIPRKIDKQLTALGA 120
Qy 121 RHFYDTGHADDCVGLLELVEPWIAGLWPAIRKHFSSRGQEEISGALVPASPIRLTDLV 180
Db 121 NRLFDRABADQVGLLELVEPWIIEKFATLASRPDISADKN-----AITSSNKLNGV 175
Qy 181 KSE---LHIESQVELLRFDSDGR-----KDEVLKONAVNSQSNVYI 221
Db 176 KTEEEKKALLQKRIEEDSDDEGRGVIGIDMLIPENHYDEPEISLKSSQTLSDNENI- 233
Qy 222 EDFESSILTRSYV-----PLSQASLNIPLGPP-----EYLQVHLQESLQESQVSTYSADPV 273
Db 234 -----RVPIAPQPIVSSVSNRKLPEDTKLEWQNLCKMPGVYVTKPFVFLVVASAFV 284
Qy 274 FOVPISKAVQVLTDAIKTTLLEVELDISN--TDFSYQPGDAFVVICPNSDEVOSSLQRL 331
Db 285 TD-PFSK-----KIKTKRMITVDPGDHAAELQYEGDAIYFCVPRPALEVNFILKRC 335
Qy 332 QLEDKREHCVLKIKADTKKKGATLPOHIPAGCSLOFITWCLBIRALPKKAFRLALVDY 391
Db 336 GVLIDADQOCESLINPKTEKINAQIPGHVHKITTLRHMFCTCLDIRRAPGRPLIRVLAES 395
Qy 392 TSDSAEKRLQELCSKCGAAYSRFVRACACLLDLAFPSQCPRLSLLEHLPKLOPR 451
Db 396 TSDNEKRRRLLELCSAQGMKDFTFVKTGSLADMLFAFPNVKRPVDRLELRLIPR 455
Qy 452 PYSCASSLFFHGHKHEFVIEFLSTATTEVLKRGVCTGWLALIVASVLQPNIHASHED 511
Db 456 PYSMSS---YENRKARLILYSEMERPAIDGRHSRKGATLDTWLSL----- 497
Qy 512 SGKALAPKISIPPTNSFHLR-----DDPSIPIIIVGSGTGIAPFGLQREKLOE 564
Db 498 ---RIGCKVQVIGKEPARFLRPLGMTKNSAGKPLMLVWGSGTGVSVLSEFLHFLRKLO 554
Qy 565 QHPDGNCA-MWLFPGGRHORDVLFKEKLEHFLKHGILTLHKXSFSDAPVGESEAPAK 623
Db 555 DSPEDFVDVPRVLFPGGRDSSVDALYMSLEMFVSEGLT-----DLIICSEORGE 606
Qy 624 YVODNIOLHGQVARI-LQENGHIYVCGDAKONNAKDVAIDLVOIISKEVGEKLEAMKT 682
Db 607 RVQDGLAKYIDKVPFLPLASTESKIFICGDAKMSKDVWQCFSDIVASDQIPDLKAKK 666
Qy 683 LATLKEEKRYLQDIW 697
Db 667 LMDLKSDQYIEDVW 681

```

```

RESULT 8
US-09-371-347A-23
; Sequence 23, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 23

```

```

; LENGTH: 677
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-23
Query Match 20.2%, Score 731.5; DB 1; Length 677;
Best Local Similarity 29.3%, Pred. No. 0.31;
Matches 209; Conservative 122; Mismatches 252; Indels 131; Gaps 21;

Qy 2 RRFLLIATQOGAKAIAEMCEQA---VHGSFADLHCISESKYLD-----KTEIA 51
Db 78 RNIIVFGSQTGAEEFANRLSKDAHRYGKMGMSAD-----PREYDADLSSPEIDNA 131
Qy 52 PLVVVSTGTGDPDPAKRVKEIQNTLPVDFPAHLRYGLIGDSEYTYPCNGKII 111
Db 132 LVFQCMATYGEEDPTDNDQDFYDMLQETDVL---SGVKAIVFGLGNTTTHFNAMKTV 188
Qy 112 DKRLQELGARHFYDTGHADDCVGLLELVEPWIAGLWPAIRKHFSSRGQEEISGALPVAS 171
Db 189 DKRLQELGARHFYDTGHADDCVGLLELVEPWIAGLWPAIRKHFSSRGQEEISGALPVAS 171
Qy 172 PASLRTDLVSELHIESQVELLRFPDSDGRKQSEVLKONAVNSQSNVYIEDFESSILTRS 231
Db 239 ESSIR-----QYEL-----VHTDIDAA----- 256
Qy 232 VPIPSQASLNIPLGPPHYLQVHLQESLQESQVSTYSADPVFQVPISKAVQVLTNDAL 290
Db 257 -----KVMGE-MGRKL---SYENQKPPPAKQPFLLAATVTRKLN 293
Qy 291 ---KTLVELDISNTDFSYQPGDAFVVICPNSDEVOSSLQRLQLEDKREHCVLKIK 346
Db 294 QGTRHMLHLELIDSDSKIRRESGDHVAVY-PANDSALVNGLIGKILGADLDVWMSLNLD 352
Qy 347 ADTKKKGATLPOHIPAGCSLOFITWCLBIRALPKKAFRLALVDYTSDAEKRLQELCS 406
Db 353 EESNKK-----HPPCEFTSYRTALTYVYIDITNPRTVNLVELAQYASPESEBELRKVAS 407
Qy 407 KQGAAD---YSRFVADACACLLDLAFPSQCPRLSLLEHLPKLOPRPYSCASSLFFHG 464
Db 408 SSGGKELVLSVWEARHILALIDQCSLSLPRIDHLCFLRLQARYTJASSSKYHPN 467
Qy 465 KLHFFVIEFLSTATTEVLKRGVCTGWLALIVASVLQPNIHASHEDSGKALAPKISISP 524
Db 468 SVHICAVVEEYETAGR--INKGVAITNL-----RAKEP-----VGENGRALVEMFV--- 513
Qy 525 RTNSFHLPPDPSIPIIIVGSGTGIAPFGLQREKLOEHPDGNCAFWMLFPGGRHND 584
Db 514 -RKSQFLRPFKATTPVIMVGGTGVAPFIFGIRAWLRQCKE--VGETLLYYGCRSD 570
Qy 585 RDVLFREKLEHFLKHGILTLHKXSFSDAPVGESEAPAKYVODNIOLHGQVARILOEN 644
Db 571 EDVLYREELAQFHDGALTOLNVAFSR-----EQSHKYVYQHLKQDREHLM-LIEGG 623
Qy 645 GHIYVCGDAKMAKDVAIDLVOIISKEVGEKLEAMKTLLTLKEEKRYLQDIWS 698
Db 624 AHIYVCGDANMARDVQNTFYDIAELGAMENHQAVDYIKLTKMGKYSIDVWS 677

```

```

RESULT 9
US-09-371-347A-60
; Sequence 60, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10

```

```

; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 60
; LENGTH: 41
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-60

```

```

Query Match          5.9%; Score 215; DB 1; Length 41;
Best Local Similarity 100.0%; Pred. No. 14;
Matches 41; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      620 APAKYVDNIQLHGQVARIILQENHIIYVCGDAKNAKDV 660
DB      1 APAKYVDNIQLHGQVARIILQENHIIYVCGDAKNAKDV 41

```

```

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-54

```

```

Query Match          4.4%; Score 158; DB 1; Length 29;
Best Local Similarity 100.0%; Pred. No. 18;
Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      87 AHRVGLIGDSEYTFPCNGKIIDKRL 115
DB      1 AHRVGLIGDSEYTFPCNGKIIDKRL 29

```

```

RESULT 11
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028

```

```

; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

```

```

Query Match          3.2%; Score 117; DB 1; Length 22;
Best Local Similarity 100.0%; Pred. No. 21;
Matches 22; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      538 IPIIMVPGTGIAPFIFGLQHR 559
DB      1 IPIIMVPGTGIAPFIFGLQHR 22

```

```

RESULT 12
US-09-371-347A-53
; Sequence 53, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 53
; LENGTH: 23
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-53

```

```

Query Match          3.2%; Score 116; DB 1; Length 23;
Best Local Similarity 100.0%; Pred. No. 21;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      54 VVVVSTTGCDPPDTARKFYKEI 76
DB      1 VVVVSTTGCDPPDTARKFYKEI 23

```

```

RESULT 13
US-09-371-347A-25
; Sequence 25, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15

```

```
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FASTSEQ for Windows Version 4.0
;; SEQ ID NO 25
;; LENGTH: 18
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-25
```

```
Query Match          3.0%; Score 109; DB 1; Length 18;
Best Local Similarity 100.0%; Pred. No. 21;
Matches 18; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY      572 GAWLFFGCRHKRDYLF 589
Db      1 GAWLFFGCRHKRDYLF 18
```

```
RESULT 14
US-09-371-347A-55
;; Sequence 55, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A.
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; CURRENT FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FASTSEQ for Windows Version 4.0
;; SEQ ID NO 55
;; LENGTH: 19
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-55
```

```
Query Match          2.9%; Score 104; DB 1; Length 19;
Best Local Similarity 100.0%; Pred. No. 22;
Matches 19; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY      448 LQRPYSCASSLPHPKL 466
Db      1 LQRPYSCASSLPHPKL 19
```

```
RESULT 15
US-09-371-347A-52
;; Sequence 52, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A.
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; CURRENT FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
```

```
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FASTSEQ for Windows Version 4.0
;; SEQ ID NO 52
;; LENGTH: 20
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-52
```

```
Query Match          2.8%; Score 100; DB 1; Length 20;
Best Local Similarity 100.0%; Pred. No. 22;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY      4 FLIYATQOGAKIAEMC 23
Db      1 FLIYATQOGAKIAEMC 20
```

```
RESULT 16
US-09-371-347A-57
;; Sequence 57, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A.
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; CURRENT FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FASTSEQ for Windows Version 4.0
;; SEQ ID NO 57
;; LENGTH: 17
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-57
```

```
Query Match          2.4%; Score 87; DB 1; Length 17;
Best Local Similarity 100.0%; Pred. No. 23;
Matches 17; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY      484 LRKGVCTGMLALIVASV 500
Db      1 LRKGVCTGMLALIVASV 17
```

```
RESULT 17
US-09-371-347A-56
;; Sequence 56, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A.
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; CURRENT FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
```

```
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56
```

```
Query Match          1.9%; Score 68; DB 1; Length 14;
Best Local Similarity 100.0%; Pred. No. 24;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY          468 FVFNIVEFLSTATT 481
Db          1 FVFNIVEFLSTATT 14
```

```
RESULT 18
; Sequence 34, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-34
```

```
Query Match          1.7%; Score 61; DB 1; Length 18;
Best Local Similarity 55.6%; Pred. No. 24;
Matches 10; Conservative 3; Mismatches 5; Indels 0; Gaps 0;
```

```
QY          572 GAMMLFPGCRHKRDYLF 589
Db          1 GRMTLVFGCRHPEDHLY 18
```

```
RESULT 19
; Sequence 35, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
```

```
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 35
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Gallus gallus
US-09-371-347A-35
```

```
Query Match          1.7%; Score 61; DB 1; Length 18;
Best Local Similarity 55.6%; Pred. No. 24;
Matches 10; Conservative 3; Mismatches 5; Indels 0; Gaps 0;
```

```
QY          572 GAMMLFPGCRHKRDYLF 589
Db          1 GDMILLFGCRHPDMDHLY 18
```

```
RESULT 20
; Sequence 26, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 26
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-26
```

```
Query Match          1.6%; Score 58; DB 1; Length 18;
Best Local Similarity 50.0%; Pred. No. 24;
Matches 9; Conservative 3; Mismatches 6; Indels 0; Gaps 0;
```

```
QY          572 GAMMLFPGCRHKRDYLF 589
Db          1 GETLLVYGCRRSDSDYLY 18
```

```
RESULT 21
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
```

SEQ ID NO 30  
LENGTH: 18  
TYPE: PRT  
ORGANISM: Aspergillus niger  
US-09-371-347A-30

Query Match 1.6%; Score 58; DB 1; Length 18;  
Best Local Similarity 55.6%; Pred. No. 24;  
Matches 10; Conservative 2; Mismatches 6; Indels 0; Gaps 0;

QY 572 GAMWLFPGCRHKRDYLF 589  
Db 1 GPVLVFGCRKSDDEDFLY 18

RESULT 22  
US-09-371-347A-38  
Sequence 38, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Rozen, Roy A,  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 38  
LENGTH: 18  
TYPE: PRT  
ORGANISM: Thiocapaea roseopersicina  
US-09-371-347A-38

Query Match 1.6%; Score 57; DB 1; Length 18;  
Best Local Similarity 55.6%; Pred. No. 24;  
Matches 10; Conservative 2; Mismatches 6; Indels 0; Gaps 0;

QY 572 GAMWLFPGCRHKRDYLF 589  
Db 1 GRNWLIFGNRHFRDPLY 18

RESULT 23  
US-09-371-347A-32  
Sequence 32, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Rozen, Roy A,  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 32

LENGTH: 18  
TYPE: PRT  
ORGANISM: Homo sapiens  
US-09-371-347A-32

Query Match 1.5%; Score 55; DB 1; Length 18;  
Best Local Similarity 50.0%; Pred. No. 24;  
Matches 9; Conservative 3; Mismatches 6; Indels 0; Gaps 0;

QY 572 GAMWLFPGCRHKRDYLF 589  
Db 1 GRNWLIFGCRNRQMDPLY 18

RESULT 24  
US-09-371-347A-29  
Sequence 29, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Rozen, Roy A,  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 29  
LENGTH: 18  
TYPE: PRT  
ORGANISM: Vigna radiata  
US-09-371-347A-29

Query Match 1.5%; Score 54; DB 1; Length 18;  
Best Local Similarity 44.4%; Pred. No. 24;  
Matches 8; Conservative 5; Mismatches 5; Indels 0; Gaps 0;

QY 572 GAMWLFPGCRHKRDYLF 589  
Db 1 GPALLFPGCRNRQMDPLY 18

RESULT 25  
US-09-371-347A-28  
Sequence 28, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Rozen, Roy A,  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 28  
LENGTH: 18

TYPE: PRT  
ORGANISM: Drosophila melanogaster  
US-09-371-347A-28

Query Match 1.5%; Score 53; DB 1; Length 18;  
Best Local Similarity 44.4%; Pred. No. 24;  
Matches 8; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

Qy 572 GAMWLFQGRHKRDYLF 589  
Db 1 GSEILYFGCRKRSSEYLY 18

RESULT 26  
US-09-371-347A-61

Sequence 61, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A.  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 61  
LENGTH: 9  
TYPE: PRT  
ORGANISM: Homo sapiens  
US-09-371-347A-61

Query Match 1.4%; Score 51; DB 1; Length 9;  
Best Local Similarity 100.0%; Pred. No. 26;  
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 690 KRYLDIWS 698  
Db 1 KRYLDIWS 9

RESULT 27  
US-09-371-347A-36  
Sequence 36, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A.  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 36  
LENGTH: 18  
TYPE: PRT

ORGANISM: Escherichia coli  
US-09-371-347A-36

Query Match 1.4%; Score 51; DB 1; Length 18;  
Best Local Similarity 50.0%; Pred. No. 24;  
Matches 9; Conservative 2; Mismatches 7; Indels 0; Gaps 0;

Qy 572 GAMWLFQGRHKRDYLF 589  
Db 1 GKNWLFQGNPHFTEDFLY 18

RESULT 28  
US-09-371-347A-37

Sequence 37, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A.  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 37  
LENGTH: 18  
TYPE: PRT  
ORGANISM: Saccharomyces cerevisiae  
US-09-371-347A-37

Query Match 1.4%; Score 51; DB 1; Length 18;  
Best Local Similarity 44.4%; Pred. No. 24;  
Matches 8; Conservative 5; Mismatches 5; Indels 0; Gaps 0;

Qy 572 GAMWLFQGRHKRDYLF 589  
Db 1 GEVFLYIGSRKREBYLY 18

RESULT 29  
US-09-371-347A-27  
Sequence 27, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A.  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 27  
LENGTH: 18  
TYPE: PRT  
ORGANISM: Oryctolagus cuniculus





Query Match 0.94; Score 31; DB 1; Length 18;  
 Best Local Similarity 62.54; Pred. No. 25;  
 Matches 5; Conservative 0; Mismatches 3; Indels 0; Gaps 0;

QY 572 GAMMLFPG 579  
 Db 1 GLAWLFG 8

## RESULT 34

US-09-371-347A-59  
 ; Sequence 59, Application US/09371347A  
 ; GENERAL INFORMATION:  
 ; APPLICANT: Gravel, Roy A.  
 ; APPLICANT: Rozen, Rima  
 ; APPLICANT: Leclerc, Daniel  
 ; APPLICANT: Wilson, Aaron  
 ; APPLICANT: Rosenblatt, David  
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
 ; FILE REFERENCE: 50004/003003  
 ; CURRENT FILING DATE: 1999-08-10  
 ; PRIOR APPLICATION NUMBER: 09/232,028  
 ; PRIOR FILING DATE: 1999-01-15  
 ; PRIOR APPLICATION NUMBER: 60/071,622  
 ; PRIOR FILING DATE: 1998-01-16  
 ; NUMBER OF SEQ ID NOS: 61  
 ; SOFTWARE: FastSeq for Windows Version 4.0  
 ; SEQ ID NO 59  
 ; LENGTH: 6  
 ; TYPE: PRT  
 ; ORGANISM: Homo sapiens  
 ; US-09-371-347A-59

Query Match 0.88; Score 29; DB 1; Length 6;  
 Best Local Similarity 100.0%; Pred. No. 26;  
 Matches 6; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 608 SFSRDA 613  
 Db 1 SFSRDA 6

Search completed: May 9, 2005, 15:25:31  
 Job time : 2 secs



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QY 41 SerAspLysTyrAspLeuLysThrGluThrAlaProLeuValValIleValSerThrThr 60
Db 121 TCCGATAGTATGACCTTAAACCGAAACAGACTCCTCTGTGTGTGTGTCTTACACAG 180
QY 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluIleGlnAsnGlnThr 80
Db 181 GGCAACCGAGACCCACCGACACAGCCCGCAAGTTGTTTAAAGAAATACACAAACA 240
QY 81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
Db 241 CTGGCGGTGATTTCTTGTCTGACCTGGGATAGGGTTACTGGGTCTGGATTCAGAA 300
QY 101 TyrThrTyrPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGluLeuGlyAla 120
Db 301 TACACCTACTTTTGCANTGGGGGAGATATGATTAAGACCTTCAAGACCTTGGAGCC 360
QY 121 ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValGlu 140
Db 361 CGGCATTTCTATGACATGACATGACATGCTGTAGGTTTAAAGACTTGTGTGTAG 420
QY 141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSerSerArgGlyGln 160
Db 421 CCGTGATTTGCTGACCTCTGGCCAGCCCTCAGAAAGCATTTTATAGTCAAGACAGAGCAA 480
QY 161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
Db 481 GAGAGATAAGTGGCGGACCTCCGGTGGCATCATCTGATCTTGAAGACAGACCTTGTG 540
QY 181 LysSerGlyLeuLeuLeuHisIleGluSerGlnValGluLeuLeuArgPheAspAspSerGly 200
Db 541 AAGTCAGAGCTGCTACACATTTGAATCTCAAGTCAAGCTTTCAGATTCGAGATTCAGGA 600
QY 201 ArgLysAspSerGlyValIleLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
Db 601 AGAAGAGATTTTGAGCTTTTGAAGCAAAATGCAAGTGAACAGACCAATCCAAATGTTGA 660
QY 221 IleGluAspPheGluSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Db 661 ATTGAAGCTTTGAGTCTTCACTTACCGTTCCGTTACCCCACTCTCAAGACCTCTCTG 720
QY 241 AsnIleProGlyLeuProProGluTyrLeuGlnValHisLeuGlnGluSerLeuGlyGln 260
Db 721 AATTTCTCTGTTTACCCCGAATATTTTACAGGTACATGCGAGGTCTCTTGGGCGAG 780
QY 261 GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Db 781 GAGGAAAGCCAGATATGATGATTCAGACATGCAAGTTTTCAGATGCAATTTCAAG 840
QY 281 AlaValGluLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
Db 841 GCGATTCACTTACTTACGAATGATGCCATTAACCACTGCTGGTGAATTTGACATT 900
QY 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Db 901 TCAAATTCAGACTTTTCTTACAGCTGAGATGCTTCAAGCTGATCTGCCCTTAACAGT 960
QY 321 AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGluAspLysArgGluHisCys 340
Db 961 GATTTCAAGGTACAAAGCTTCTCCAAAGACTGCGAGCTTGAAGTTAAAGAGACACTGC 1020
QY 341 ValLeuLeuLysIleLysAlaAspThrLysLysLysGlyAlaThrLeuProGlnHisIle 360
Db 1021 GTCTTTTGAATAAAGGACAGACAAAGAAAGAGAGTACTTAAACCCACATATA 1080
QY 361 ProAlaGlyCysSerLeuGlnPheThrTrpCysLeuGluIleArgAlaIlePro 380
Db 1081 CTGGCGGATGTTCTTCCATTTATTTTAACTGGGTCTTGAATCCGAGCAATTCCT 1140
QY 381 LysLysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGluLysArg 400
Db 1141 AAAAAGGATTTTTCAGACCTTGTGACTATACAGTGAACAGTGTGAAAAGCGAGG 1200
QY 401 LeuGlnGluLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla 420

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Db 1201 CTACAGAGCTGTACATTAACAAAGGGGACCGCATTAATAGCCGCTTGTACAGATGCC 1260
QY 421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Db 1261 TGTGCTGCTTTGTGATCTCTCTCTGCTTCTCTCTCTCTCTCTCTCTCTCTCTCTCT 1320
QY 441 LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerLeu 460
Db 1321 CTGCTCGAATCTTCTTAACTTCAACCCAGACCAATTCGTGTGAGTCAAGCTCAAGTTA 1380
QY 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Db 1381 TTTCACCCAGGAAAGCTTCATTTTGTCTTCAACATTTGGAATTTCTGTCTACTGCCACA 1440
QY 481 ThrGluValLeuArgLysGlyValCysThrGlyTyrPheLeuAlaLeuValAlaSerVal 500
Db 1441 ACAGAGGTTCTGCGAAGGAGATATGTAAGGCTGGGCTGGCTTGTGTGTCTTCAAGTT 1500
QY 501 LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle 520
Db 1501 CTTCAGCCAAACATACATGATGATCCCATGAAGACAGCGGAAAGCCCTGGCTCTTAAGATA 1560
QY 521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Db 1561 TCCATCTCTCTCGAACAACAATTTCTTCCATTCACATGACACCTCAATCCCATC 1620
QY 541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Db 1621 ATAATGGTGGGTCCAGGAACCGGATAGCCCGCTTTATTTGGTCTTCAACAACATAGAGAG 1680
QY 561 LysLeuGlnGluGlnHisProAspGlyAsnPheGlyAlaMetTrpLeuPhePheGlyCys 580
Db 1681 AATCTCAAGAACACACCCAGATGAAATTTTGGACCAATTTGGTGTGTGTGTGTGTGTGC 1740
QY 581 ArgHisLysAspArgAspTyrLeuPheArgLysGluLeuArgHisPheLeuLysHisGly 600
Db 1741 AGGCATTAAGATAGGATATTTATTTATTCAGAAAAGAGCTCAGACATTTCTTAAAGCATGGG 1800
QY 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGluAla 620
Db 1801 ATCTTAATCATCTTAAAGGTTTCTCTCTCAAGATGATCTCTGTGGGAGAGAGAGGCC 1860
QY 621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnValAlaArgIleLeu 640
Db 1861 CCGCAAGATATGTAACAGACACATCATCATGATGCCAGCAGTGGGAGAGATCTC 1920
QY 641 LeuGlnGluAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Db 1921 CTCAGAGAGAACGGCATATTTATGTGTGTGAGATCAAAAGAAATATGGCCAAAGATGTA 1980
QY 661 HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGluAlaMet 680
Db 1981 CATGATGCCCTTGTGCAAAATATTAAGCAAGAGGTGTGAAGTGAATAACATGAAGCATG 2040
QY 681 LysThrLeuAlaThrLeuLysGluGluLysArgTyrLeuGlnAspIleTrpSer 698
Db 2041 AAAACCTGGCCACTTTAAAGAAAGAAAGAACGCTTACGAGATATTGTGTCA 2094

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RESULT 2  
 US-09-371-347A-24  
 ; Sequence 24, Application US/09371347A  
 ; GENERAL INFORMATION:  
 ; APPLICANT: Gravel, Roy A.  
 ; APPLICANT: Rozen, Rima  
 ; APPLICANT: Leclerc, Daniel  
 ; APPLICANT: Wilson, Aaron  
 ; APPLICANT: Rosenblatt, David  
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
 ; CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
 ; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER  
 ; FILE REFERENCE: 50004/003003  
 ; CURRENT APPLICATION NUMBER: US/09/371.347A

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; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 24
; LENGTH: 3259
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-24

Alignment Scores:
Pred. No.: 5,66e-197      Length: 3259
Score: 3624.00           Matches: 698
Percent Similarity: 100.00%      Conservative: 0
Best Local Similarity: 100.00%      Mismatches: 0
Query Match: 100.00%      Indels: 0
DB: 1                      Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-24 (1-3259)

QY 1 MeArghrghpHeuLeuLeuTyraLaThgInngIngluAlaYsaLaIlEaIaGlu 20
Db 80 ATGAGGAGGTTTCTGTATCTATATGCTACACAGGAGGACAGGAAAGCCATCGCAGAA 139
QY 21 GluMeCygluGInAlaValaIhIsgIyPheSerAlaAspLeuHieCyelIeSerGlu 40
Db 140 GAAATGCTGTAGCAAGCTGTGTACATGATTTTCTGCAGATCTTCATCTGATTAAGTGA 199
QY 41 SerAspLyTyraSpLeuLeuThrGluThraLaProLeuValaIValaISeThrThr 60
Db 200 TCCGATTAAGTATGACTTAAACCGAAACAGCTCTCTTGTGTGTGTGTTCTACACAG 259
QY 61 GlYThrgIaSpProProAspThraLaArgLySpheValaYsgIuIeGInaSnGInThr 80
Db 260 GGCAACCGGAGACCCAGCCGACAGCCCGCAAGTTGTTAAAGAAATACAGAACCAACA 319
QY 81 LeuProValaAspPhePheAlaHieLeuArgTyrgIyLeuLeuGlyLeuGlyAspSerGlu 100
Db 320 CTGCGGGTGTATTTCTTTGTCTCAGCTCGGATGAGGTATCTGCGGTGATTCAGAA 379
QY 101 TyThrTyrrPheCyAsnGlyGlyIySeIleAspLySArgLeuGIngluLeuGlyAla 120
Db 380 TACACCTAATTGGAATGAGGAGAAATATGATTAACACATTCAGAGCTTGAGACC 439
QY 121 ArgHisPheTyrrAspThrgIyHieAlaAspAspCySValaGlyLeuGluLeuValaIglu 140
Db 440 CGGCAATTTCTATGACACTGACATGACATGACATGCTGTAGGTTTGAACCTTGCTGAG 499
QY 141 ProTrrIleAlaGlyLeuTrrProAlaLeuArgLyShiePheArgSerSerArgGlyGln 160
Db 500 CCGGATTTGCTGAGACTGTGCGCAGCCCTCAGAAAGCATTTTAAAGTCAAGCAGAGCAAA 559
QY 500 CCGGATTTGCTGAGACTGTGCGCAGCCCTCAGAAAGCATTTTAAAGTCAAGCAGAGCAAA 559
Db 161 GluGluIleSerGlyAlaLeuProValaIaSerProAlaSerLeuArgThraSpLeuVal 180
QY 161 GluGluIleSerGlyAlaLeuProValaIaSerProAlaSerLeuArgThraSpLeuVal 180
Db 560 GAGAGATTAAGTGGGACCTCCGCTGGCATCACTGATCTTGAGGACAGACCTTGAG 619
QY 181 LysSerGluLeuLeuHieIleGlySerGlnValaGluLeuLeuArgPheAspAspSerGly 200
Db 620 AAGTCAGAGCTGCTACACATTCAGATTCAGAGCTTGCTGAGATTCAGATTCAGAG 679
QY 201 ArgLyAspSerGluValaLeuLySInaSnAlaValaIaAsnSerAsnGInSerAsnValaI 220
Db 680 AGAAGAGATTCGAGGTTTGAAGCAAAATCAGAGGAAACAGCAACCAATCCAAATGTTGTA 739
QY 221 IlleGluAspPheGluSerSerLeuThraArgSerValaProProLeuSerGlnAlaSerLeu 240
Db 740 ATTAAGCTTTGAGTCTCACTTACCCGTTGCGGATCCCACTCTCAAGAGCTCTGTG 799
QY 241 AsnIleProGlyLeuProProGluTyrrLeuGlnValaHieLeuGIngluSerLeuGlyGln 260

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Db 800 AATATTCCTGGTTTATCCCAAGATATTTACAGGTACATCTGCAGAGTCTTGGCCAG 859
QY 261 GluGluSerGlnValaSerValaThraSerAlaAspProValaPheGlnValaProIleSerLyS 280
Db 860 GAGAAAGCCCAAGATATCTGTGACTTCCAGCAGATTCAGATTTTCAAGTCCCAATTTCAAG 919
QY 281 AlavaGlnLeuThraThraAsnAspAlaIleLySThraThraLeuLeuValaGluLeuAspIle 300
Db 920 GCAGTTCAACTTACTACGAATGATGCCATTAACCACTCTGCTGTAGATTCGACATTC 979
QY 301 SerAsnThraSpPheSerTyrrGlnProGlyAspAlaPheSerValaIleCyProAsnSer 320
Db 980 TCAATACAGACTTTTCTTATCAGCTCGAGATGCTTCAGCCGTGATCTGCCCTTAACAGT 1039
QY 321 AspSerGluValaGlnSerLeuLeuGlnArgLeuGlnLeuGlnuAspLySArgGlnHieCyS 340
Db 1040 GATTCGAGGTTCAAGCTTACTTCAAGACTGACGCTTGAAAGTAAAGAGACACTGC 1099
QY 341 ValLeuLeuLySIlleYsaIaAspThraLySlySglYalathraLeuProGlnHieIle 360
Db 1100 GTCCTTTGAAAATTAAGGAGACACAAAGAAAGAGAGCTTACCCACATATA 1159
QY 361 ProAlaGlyCySserLeuGlnPheIlePheThrTrrCySleuGlnIleArgAlaIlePro 380
Db 1160 CCTCGGGATGTTCTCTCCAGTTCATTTTACCTGTGTCTTGAATCCGAGCAATTCCT 1219
QY 381 LysLySAlaPheLeuArgAlaLeuValaAspTyrrThraSerAspSerAlaGlyLySArgArg 400
Db 1220 AAAAAGGATTTTGCAGAGCCCTGTGACTATACAGTACAGTACTGTAAGAACGCGCAGG 1279
QY 401 LeuGlnGluLeuCySserLySngInYalAlaAspTyrrSerArgPheValaArgAspAla 420
Db 1280 CTACAGGAGCTGTGCAATTAACAAAGGAGGAGCCGATTAATAGCCGTTGTACGAGATGCC 1339
QY 421 CysAlaCySleuLeuAspLeuLeuAlaPheProSerCySgInProProLeuSerLeu 440
Db 1340 TGTGCTGCTTGTGTGATCTCTCTGCTGCTTCCCTTCCGACCACTCAAGTCTC 1399
QY 441 LeuLeuGlnHieLeuProLySleuGlnProArgProTyrrCySAlaSerSerLeu 460
Db 1400 CTGCTCAACATCTTCTTAACCTTCAACCCAGACATATGCTGTGACAGCTCAAGTTTA 1459
QY 461 PheHisProGlyLySleuHiePheValaPheAsnIleValaGluPheLeuSerThraIthr 480
Db 1460 TTTCAACCGAGAAAGCTCCATTTTGTCTTCAACATTTGGAAATTTCTGTCTACGCCACA 1519
QY 481 ThrGluValaLeuArgLySglYalCySThrgIyTrrLeuAlaLeuLeuValaIaSerVal 500
Db 1520 ACAGAGGTTCTGCGGAGGAGGTATGTACAGGCTGGCTGGCTGTGTTGCTTCAAGTT 1579
QY 501 LeuGlnProAsnIleHieAlaSerHieGluAspSerGlyLySAlaLeuAlaProLySIlle 520
Db 1580 CTTGAGCCAAACATACATGATCCCATGAAAGACGCGGAAAGCCCTGCGCTCTTAAGATA 1639
QY 521 SerIleSerProArgTyrrThraSerPheHieLeuProAspAspProSerIleProIle 540
Db 1640 TCCATCTCTCTCGAACAACAATTTCTTCCACTTACAGATGACCTCTCATATCCCATC 1699
QY 541 IlleValaGlyProGlyTyrrGlyIleAlaProPheIleGlyPheLeuGlnHieArgGlu 560
Db 1700 ATTAATGGTGGGTCCAGGAAACCGGCATAGCCCGTTTATTTGGTCTCTAACAATAGAG 1759
QY 561 LysLeuGlnGluGlnHieProAspGlyAsnPheGlyAlaMetTrrPhePhePheGlyCyS 580
Db 1760 AAACCTCAAGAAACAACCCAGATGAAATTTTGACCAATGTGTGTTTGGCTGC 1819
QY 581 ArgHisLySAspArgAspTyrrLeuPheArgLySgluLeuArgHisPheLeuLySglY 600
Db 1820 AGGATTAAGATTAAGATTAATCTATTCAGAAAABAGCTCAGACATTTCTTAAACAATGG 1879
QY 601 IlleLeuThraHieLeuLySValaSerPheSerArgAspAlaProValaGlyGluGluAla 620
Db 1880 ATCTTAATCATCTAAAGGTTTCTCTCAAGAGATGCTCTGTGGGAGAGAGAGGCC 1939

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QY      621  ProAlaLysTyrValGlnAspAsnIleGlnLeuHISGlyGlnGlnValAlaArgIleLeu 640
      |||||
Db      1940  CCACCAAGATGATGACAGACAAACATCTCATGCGCCAGCGCGGCAAGATCTTC 1999
QY      641  LeuGlnGlnAsnGlyHISileTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
      |||||
Db      2000  CTCGAGGAGAACCGCCCATATTTATGTGTGAGATGCAAGAAATATGCGCAAGATGTA 2059
QY      661  HisAspAlaLeuValGlnIleIleSerIleGlnValGlyValGlnIleGlnIleMet 680
      |||||
Db      2060  CATATGACCCCTTGCAATATATATAGCAAGAGGTGGAGTTGAAAAAAGTGAAGCAATG 2119
QY      681  LysThrLeuAlaThrLeuLysGlnGluLysArgTyrLeuGlnAspIleTyrSer 698
      |||||
Db      2120  AAAACCTGGCCACTTTAAAGAAAGAAACGCTACCTTCAGATATTGGTCA 2173

RESULT 3
US-09-371-347A-41
; Sequence 41, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 41
; LENGTH: 2097
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-41

Alignment Scores:
Pred. No.:      6,44e-197      Length:      2097
Score:          3620.00      Matches:      697
Percent Similarity: 100.00%      Conservative: 1
Best Local Similarity: 99.86%      Mismatches: 0
Query Match:      99.89%      Indels:      0
DB:               1          Gaps:      0

us-09-371-347a-2 (1-698) x US-09-371-347a-41 (1-2097)
QY      1  MetArgArgPheLeuLeuLeuTyrAlaThrGlnGlnGlnAlaLysAlaIleAlaGlu 20
      |||||
Db      1  ATGAGGAGGTTTCTGTAATACTATATGCTACACAGCAGGAGCAGCAAGGCATCGCAGAA 60
QY      21  GluMetCysGlnGlnAlaValAlaHISGlyPheSerAlaAspLeuHISGlyIleSerGlu 40
      |||||
Db      61  GAAATATGTGAGCAAGCTGTGTGATCATGAGATTTCTGAGATCTTCACTGATTTAGTGAA 120
QY      41  SerAspLysTyrAspLeuLeuLeuThrGluThrAlaProLeuValValAlaIleSerThr 60
      |||||
Db      121  TCCGATATAGATGACCTTAAACCGAAACGACCTCTCTGTGTGTGTGTGTGTCTTCAACAG 180
QY      61  GlyThrGlyAspProProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
      |||||
Db      181  GGCACCGGAGACCAACCGACACAGCCGCAAGTTTGTAAAGAAATACAGAAACCAACA 240
QY      81  LeuProValAspPhePheAlaHISLeuArgTyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
      |||||
Db      241  CTGCGGGTGTATTTCTTTGTCTGACCTGCGGGTATGGGTTACTGGGTTCTGGGATTCAGAA 300
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```
QY      101  TyrThrTyrPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlnValAla 120
      |||||
Db      301  TACACCTACTTTTGCATATGGGGGAGAGATATTCATTAAGACCTTCAAGAGCTTGGAGCC 360
QY      121  ArgHisPheTyrAspThrGlyHISAlaAspAspCysValGlyLeuGlnLeuValAlaGlu 140
      |||||
Db      361  CGGCAATTTATGACACATGACATGACATGACTGTGTAGATTATTAAGCTTGTGTGTGAG 420
QY      141  ProTrpIleAlaGlyLeuTrpProAlaLeuArgGlyHisPheArgSerSerArgGlyGln 160
      |||||
Db      421  CCGTGATTCCTGACCTCGCCAGCCCTCAGAAAGCATTTAGTGAACGACAGAGACAA 480
QY      161  GlnGlnIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
      |||||
Db      481  GAGAGATTAAGTGGCGGACCTCCGGTGGCATACCTGCATCTTGAAGACAGACCTTGTG 540
QY      181  LysSerGlnLeuLeuHISileGlnSerGlnValGlnLeuLeuArgPheAspSerGly 200
      |||||
Db      541  AAGTCAGAGCTGCTACACATTTGAATCTCAAGTCGAGCTTCTGAGATTGATGATTCAGGA 600
QY      201  ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerGlnAsnValVal 220
      |||||
Db      601  AGAAGGATTTCTGAGTTTGAAGCAAAATGACAGTAACAGCAACCAATCCAAATGTGTGA 660
QY      221  IleGlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
      |||||
Db      661  ATTGAACATTTAGTGTCTGCTCACTTACCCGTTGGGTACCCCACTGCTCACAAGCCTCTG 720
QY      241  AsnIleProGlyLeuProProGlyTyrLeuGlnValHISLeuGlnGlnSerLeuGln 260
      |||||
Db      721  AATATTCCTGTGTTTACCCCAAGATATATTACAGGTATCATCTGACGAGGTCTCTGGCAG 780
QY      261  GlnGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
      |||||
Db      781  GAGGAAAGCCAGATATGTGACTTCCAGCAATCCAGTTTTCAGTGCCAAATTCAAAG 840
QY      281  AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
      |||||
Db      841  GCGTTCAACTTACTACGAAATGATGACCATAAACCACTCGCTGGTAGAATTGACATT 900
QY      301  SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
      |||||
Db      901  TCAAAATACAGACTTTTCTTATCAGCCCTGAGAGATGCTTCAAGCTGATCTCCCTAACAGT 960
QY      321  AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgLysIleCys 340
      |||||
Db      961  GATTTGAGGTACAAAGCCTTACTCCAAAGCTGCACTTGAAGATTAAGAGACACTGC 1020
QY      341  ValLeuLeuLysIleLysAlaAspThrLysLysGlyValAlaThrLeuProGlnHISIle 360
      |||||
Db      1021  GTCTTTTGAATAATTAAGGACAGACACAAAGAAAGAGACTACCTTACCCCGACATATA 1080
QY      361  ProAlaGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGlnIleAlaGlnIlePro 380
      |||||
Db      1081  CCTGCGGAGATGTTCTCCCACTCATTTTAACTCGGTGTGTGAATCCAGCAATTTCTT 1140
QY      381  LysLysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGlnLysArgArg 400
      |||||
Db      1141  AAAAAGCATTTTGGCAGCCCTTGTGACTATACAGTACAGTGTGAAAAAGCGGAGG 1200
QY      401  LeuGlnGlnLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla 420
      |||||
Db      1201  CTACAGAGCTGTGACATTAACAAGGGGAGCCGATTAATAGCCGCTTGTACAGAGATGCC 1260
QY      421  CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
      |||||
Db      1261  TGTGCTGTGTGTGTGATCTCTCTCTGCTTCCCTTCCCTTCCAGCCACCACTCAAGTCTC 1320
QY      441  LeuLeuGlnHISLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerLeu 460
      |||||
Db      1321  CTGCTGAAACATCTTCTTAACCTTCAACCAAGACATATTGCTGTGCAAGCTCAAGTTTA 1380
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```
Qy 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Db 1381 TTTTACCCAGGAAAGCTCCATTTTGTCTTCAACATGTGGAAATTTCTGTCTACGTCCACA 1440
Qy 481 ThrGluValLeuArgLysGlyValCysThrGlyTyrPheValAlaLeuValAlaSerVal 500
Db 1441 ACAGAGGTTCTGCGGAAAGGAGTATGTACAGAGCTGGCGCTTGTTGGTTGCTTCAAGTT 1500
Qy 501 LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysValAlaLeuAlaProLysIle 520
Db 1501 CTTACGCGCAACATACATGATCCCATGAAGACAGCGGAAAAGCCCTGCTCTTAAGATA 1560
Qy 521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Db 1561 TCCATCTCTCTCTGACACACAAATTTCTTCCATTCACAGATGACCCCTCAATCCCATC 1620
Qy 541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Db 1621 ATATGGTGGGTCCAGCAAGACCGGCAATGCCCTGTTATGGGTTCTTCAACATAGAGAG 1680
Qy 561 LysLeuGlnGluGlnHisProAspGlyAsnPheGlyAlaMetTyrPhePheGlyCys 580
Db 1681 AAATCTCCAAAGAACACACCCAGATGAAATTTGGAGCAATGTGTTTGTGGTGGC 1740
Qy 581 ArgHisLysAspArgAspTyrIleuPheArgLysGluLeuArgHisPheLeuLysGly 600
Db 1741 AGGCAATAGATAGGATATCTATTCAGAAAAGCTCAGACATTTCTTACAGATGG 1800
Qy 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGluAla 620
Db 1801 ATCTTAATCATCTAAAGAGTTTCTCTTCAAGAGATGCTCTGTGGGAGGAGGAAACC 1860
Qy 621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
Db 1861 CCACCAAGATGTACACAGAACACATCCAGCTTCAAGCCAGAGTGGCCAGATCTTC 1920
Qy 641 LeuGlnGluAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Db 1921 CTCAGAGAAACGGCCATATTTATGTGTGTGGAGATGCAAAAGATATGTGCCAAGATTA 1980
Qy 661 HisAspAlaLeuValGlnIleIleSerLysGlyValGlyValGlyLysLeuGluAlaMet 680
Db 1981 CATGATGCCCTTGGCAATATATATAGCAAGAGGTTGAGTTGAAAACCTAGAACATATG 2040
Qy 681 LysThrLeuAlaThrLeuLysGluGluLysArgTyrIleGlnAspIleTyrSer 698
Db 2041 AAAACCTGGCCACTTTAAAGAAAGAAAGCTAACCCTTCAAGATTTGTGCTCA 2094

RESULT 4
US-09-371-347A-43
; Sequence 43, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 43
; LENGTH: 2097
; TYPE: DNA
; ORGANISM: Homo sapiens
```

```
US-09-371-347A-43
Alignment Scores:
Pred. No.: 1,576-196 Length: 2097
Score: 3613.00 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 1
Query Match: 99.70% Indels: 0
DB: 1 Gaps: 0

US-09-371-347A-2 (1-698) x US-09-371-347A-43 (1-2097)
Qy 1 MetArgArgPheLeuLeuLeuTyrAlaThrGlnGlnGlnAlaLysAlaIleAlaGlu 20
Db 1 ATGAGAGGTTTCTGTATCTATGCTACACAGAGGAGACGCAAGCCATGCGCAAA 60
Qy 21 GluMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGlu 40
Db 61 GAAATGTGTGACAGAGGTGTGTACATGATTTTCTGCAGATCTTCAATATTAAGTAA 120
Qy 41 SerAspLysTyrAspLeuLysThrGluThrAlaProLeuValIleValIleSerThrThr 60
Db 121 TCCGATAGATGTACCTTAAACCGAAACACCTCTCTTGTGTGTGTGTTTCAACAG 180
Qy 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluIleGlnAsnGlnThr 80
Db 181 GGCACCGGAGACCAACCCGACACAGCCCGCAAGTTGTTAAGAAATACAGAACCAACA 240
Qy 81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLysAspSerGlu 100
Db 241 CTCGCGGTGATTTCTTTGTCTACCTGGGATAGGGTTTACGGGTCTGGATTCAGAA 300
Qy 101 TyrThrTyrPheCysAsnGlyLysIleIleAspLysArgLeuGlnGlnValAla 120
Db 301 TACACCTACTTTTCAATGGGGGAGAGATTAATTAACACACTTCAAGACTTGGAGCC 360
Qy 121 ArgHisPheTyrAspThrGlnHisAlaAspAspCysValGlyLeuGluLeuValIleGlu 140
Db 361 CGGATTTCTATGACATCGACATGCAATGATCTGTAGTTTGAACCTTGTGGTTGAG 420
Qy 141 ProTyrIleAlaGlyLeuTyrProAlaLeuArgLysHisPheArgSerArgGln 160
Db 421 CCGTGAATGCTGGACTCTGGCCAGCCCTCAGAAAGATTTTAAAGTCAAGCAGAGACAA 480
Qy 161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuAspLeuVal 180
Db 481 GAGAGATTAAGTGGCGCACTCCGGTGGCACCTGATCTTGAAGAGACAGACTTGTG 540
Qy 181 LysSerGluLeuLeuHisIleGluSerGlnValGluLeuLeuArgPheAspAspSerGly 200
Db 541 AAGTCAAGCTGCTACACATTTGAATCTCAAGTCCAGCTTCTGAGATTCAGATTCAGGA 600
Qy 201 ArgLysAspSerGluValAlaLeuLysGlnAsnAlaValAsnSerAsnGlnSerValVal 220
Db 601 AGAAGAGTCTTGAGGTTTGAACCAAAATCAGATGAACACACCAACCAATCAAGTGTGA 660
Qy 221 IleGluAspPheGluSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Db 661 ATTAAAGCTTTGAGTCTTCACTTACCCGTTCCGTGACCCCACTCTCAAGACCTCTCTG 720
Qy 241 AsnIleProGlyLysProProGluTyrLeuGlnValHisLeuGlnGluSerLeuGln 260
Db 721 AATATTCCTGTTTACCCCGCAATATTTTACAGTATCTGCGAGAGTCTCTTGGCCAG 780
Qy 261 GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Db 781 GAGGAAAGCCAAAGATCTGTGACTTCAGCAGATCCAGATTTTCAAGGCCCAATTTCAAG 840
Qy 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
Db 841 GCAGTTCAACTTACTAGAAATGATGCATAAACCACTGCTGAGTGAATTTGACATTT 900
Qy 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
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Db 901 TCAATACAGCTTTCTTACAGCTGAGATGCTTACAGCGATCTGCTTAACAGT 960
Qy 321 AspSerGluValGlnSerLeuGlnArgLeuGlnLeuGlnAspLysArgGluHisCys 340
Db 961 GATTCTGAGGATCAAAAGCCTACTCCAAAGACTGCAGCTTGAAGATTAAGAGACACTGC 1020
Qy 341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Db 1021 GTCCCTTGAAGAAATTAAGGACAGACAAAGAGAGAGCTTACCTTACCCAGCATATA 1080
Qy 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
Db 1081 CCTGGGAGATGTTCTCTCCAGTTCATTTTACCGTGCTCTGAAATCCGAGCAATTCCT 1140
Qy 381 LysLysAlaPheLeuArgAlaLeuValAspTrpThrSerAspSerAlaGluLysArgArg 400
Db 1141 AAAAAGCATTTTGGCCGAGCCCTTGAGCATATACAGTGACAGTGCTGAAAAGCCGAGG 1200
Qy 401 LeuGlnGluLeuCysSerLysGlnGlyAlaAlaAspTrpSerArgPheValArgAspAla 420
Db 1201 CTACAGAGCTGTGCAGTAAACAAAGGGGACCCCATATATAGCCGCTTTGTAGAGATGCC 1260
Qy 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Db 1261 TGTGCTGCTGTTGGATCTCTCTCGCTTCCCTTCTTGCCAGCCACACCTCAGTCTC 1320
Qy 441 LeuLeuGlnHisLeuProLysLeuGlnProArgProLysCysAlaSerSerLeu 460
Db 1321 CTGCTGCACATCTTCTTAACTTCAACCCAGACCAATTCGTGTGCAAGCTCAAGTTTA 1380
Qy 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Db 1381 TTTTACCCAGGAAAGCTCCATTTTGTCTTCAACATTTGTGAATTTCTGTCTACTGCCACA 1440
Qy 481 ThrGluValLeuArgLysGlyValCysThrGlyTrpLeuAlaLeuValAlaSerVal 500
Db 1441 ACAGAGGTTCTGCGAAGGAGGTATGTACAGCTGCGCTTGCTTGGTTGCTTCACTT 1500
Qy 501 LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle 520
Db 1501 CTTGAGCGAAACATACATGATGCCATCAAGAACAGCGGAAAGCCGTGCTCCATMAATA 1560
Qy 521 SerIleSerProArgTrpThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Db 1561 TCCATCTCTCTCGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Qy 541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Db 1621 ATATATGTTGGGTCCAGGAAACCGGATAGCCCGCTTATTGGGTTCTTACAAACATAGAG 1680
Qy 561 LysLeuGlnGluGlnHisProAspGlyAsnPheGlyAlaMetTrpPheLeuPheGlyCys 580
Db 1681 AAACTCCAAAGAACCAACCCAGATGAGAAATTTGAGCAATGTGTGTTTTTGGGTGC 1740
Qy 581 ArgHisLysAspArgAspTrpLysPheArgLysGluLeuArgHisPheLeuLysHisGly 600
Db 1741 AGGATATAGATAGGATATCTATCTTCAAGAAAACAGCTCAGACATTTCTTAAAGATGG 1800
Qy 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGluAla 620
Db 1801 ATCTTAATCATCTAAAGGTTTCTTCTCAAGAGATGCTCTGTGGGGAGAGAGAGCC 1860
Qy 621 ProAlaLysTrpValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
Db 1861 CCAGCAAGATGTATGACAGAACATCATCGTTTATATGCCAGCGAGGATATCTTC 1920
Qy 641 LeuGlnGluAsnGlyHisIleLysValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Db 1921 CTCAGAGAGAACGGCCATATTTATGTGTGTGAGATGCCAAAGATATAGCCCAAGATGTA 1980
Qy 661 HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGluAlaMet 680

Db 1981 CATGATGCCCTTGTGCAAAATATATAGCAAGAGTTGGAATTTGAAAACTAGAGCAATG 2040
Qy 681 LysThrLeuAlaThrLeuLysGluLysArgTrpLeuGlnAspIleTrpSer 698
Db 2041 AAAACCTGCGCACTTTAAAAAGAAAGAAAAAGCTACCTTCAGATATTTGTGCA 2094

RESULT 5
US-09-371-347A-45
; Sequence 45, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosemdiat, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 45
; LENGTH: 2094
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-45

Alignment Scores:
Pred. No.: 2,45e-196 Length: 2094
Score: 3609.50 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 0
Query Match: 99.60% Indels: 1
Gaps: 1

us-09-371-347a-2 (1-698) x US-09-371-347a-45 (1-2094)
Qy 1 MetArgArgPheLeuLeuLeuTrpAlaThrGlnGlnGlyGlnAlaLysAlaIleAlaGlu 20
Db 1 ATAGAGAGGTTTCTGTTCATATATGCTTACACAGGAGGACGCAAGCCATCGCAGAA 60
Qy 21 GluMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGlu 40
Db 61 GAATATGTGAGCAAGCTGTGTACATGATTTTCTGCAGATCTTCACGTATTAAGAA 120
Qy 41 SerAspLysTrpAspLeuLysThrGluThrAlaProLeuValValValAlaSerThrThr 60
Db 121 TCGATATAGATATACCTTAAACGAAACAGCTCTGTGTGTGTGTGTGTGTGTGTGTAC 180
Qy 61 GluThrGlyAspProPheProPheThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
Db 181 GGCACCGGAGAACCCACCCAGACAGCCCGGAGTTTGTTAAGAAATACGAACCAACA 240
Qy 81 LeuProValAspPhePheAlaHisLeuArgTrpGlyLeuLeuGlnLysLeuGlyAspSerGlu 100
Db 241 CTCGCGGTGATTTCTTTTGCTCACCTGCGGTATGGGTACTGGGTCTCGGTGATTCAGAA 300
Qy 101 TyrThrTrpPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlnLeuGlyAla 120
Db 301 TAACTTACTTTTGGCAATGGGGGAAATATATGATTAACGACTTCAAGAGCTTGAAGCC 360
Qy 121 ArgHisPheTrpAspThrGlnHisAlaAspAspCysValGlyLeuGlnLeuValValGlu 140
Db 361 CGGCAATTTCTATACACTGCACATGCAGATGACTGTGTAGCTTTAAGACTTGTGGTTGAG 420
Qy 141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSerSerArgGlyGln 160
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Db 421 CCGTGATGCTGGACTGCGCCAGCCCTCAGAAAAGCATTTTAGTTCAGAGAGAGAA 480
Qy 161 GlnGlnIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
Db 481 GAGAGAGTAAGTGGCGACCTCCGGTGGCATCACTGCATCTTGAGAGACAGACCTTG 540
Qy 181 LysSerGlnLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
Db 541 AAGTCAGAGCTGCTACATTCATTCAGTCCAGCTTCGAGATTGATTCAGCA 600
Qy 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220
Db 601 AGAAGAAGATTCAGAGTTTGAGAGCAAAATCAGAGCAAGCAATCCAAATGTTGTA 660
Qy 221 IleGlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Db 661 ATTAAAGCTTTGAGTCTCACTTACCCGTTGCGATCCCACTCTCAAGACCTCTG 720
Qy 241 AsnIleProGlyLeuProProGlyLysIleGlnValHisLeuGlnGlnSerLeuGly 260
Db 721 AATATTCCTGCTTACCCCAAGATATTTACAGTACATCTGCAGAGATCTCTGGCCAG 780
Qy 261 GlnGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Db 781 GAGGAAAGCCAAAGTATCTGTGACTTCAGCAGATCCAGTTTCAAGTCCAAATTTCAAG 840
Qy 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
Db 841 GCAGATTCAACTTACTTACAAATGATGCCATTAACCACTCTGCTGTAATTTGACACTT 900
Qy 301 SerAsnThrAspPheSerTyrgLysProGlyAspAlaPheSerValIleCysProAsnSer 320
Db 901 TCAAATACAGACTTTCTTCTTACAGCTGGAGATGCTTCAGCGTATCTGCCCTTACAGT 960
Qy 321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgLysCys 340
Db 961 GATTCGTAGGTACAAAGCCTACTCCAAGACGTGAGCTTGAAGATTAAGAGAGACATGC 1020
Qy 341 ValLeuLeuLysIleLysAlaAspThrLysLysLysGlyAlaThrLeuProGlnHisIle 360
Db 1021 GTCCCTTTGAAAATAAGGACAGACAAAGAAAGAGCTTACCTTACCCAGCATTTA 1080
Qy 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
Db 1081 CCTGCGGAGATCTCTTCAAGTCAATTTTACCTGGTGTCTTGAATCCGAGCAATTCCT 1140
Qy 381 LysLysAlaPheLeuArgAlaLeuValAspTyrgThrSerAspSerAlaGlnLysArgArg 400
Db 1141 AAAAAGGCAATTTTGGAGCCCTTGTGACATACATGACATGACATGAGAAAGGAGG 1200
Qy 401 LeuGlnGlnLeuCysSerLysGlnGlyAlaAlaAspTyrgSerArgPheValArgAspAla 420
Db 1201 CTACAGAGGCTGTGACAGTAAACAAGGGGACCCGCTTTTACCCGCTTGTGACGAGATGCC 1260
Qy 421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Db 1261 TGTGCTGCTGTGTGATCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCT 1320
Qy 441 LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrgSerCysAlaSerSerSerLeu 460
Db 1321 CTGCTCGAAGATCTTCTTCAAACTTCAACCAAGACCATATTTGCTGTGCAAGCTTGA 1380
Qy 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
Db 1381 TTTTCAACCCAGAGAAAGCTCCATTTTGTCTTCAACATTTGTAATTTCTGTCTTACGCC 1440
Qy 481 ThrGlnValLeuArgLysGlyValCysThrGlyTrpLeuAlaLeuLeuValAlaSerVal 500
Db 1441 ACAAGAGTTCTGCGAGAGAGATGTAACAGCTGCGCTGCGCTTGTGTGCTTCACTT 1500
Qy 501 LeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIle 520
Db 1501 CTTGAGGCCAAACATATGATGATCCATGATGAGACAGCGGAAAGCCCTGCTCTTACAGT 1560

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Qy 521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Db 1561 TCATCTCTCTCTCGAACAACAATTTCTTTCATCTTACAGATGACCCCTCATATCCCATC 1620
Qy 541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGln 560
Db 1621 ATATGTGGGTCCAGAGAACCGGATAGCCCGCTTTATTTGGGTCTCTTCAACATATGAGAG 1680
Qy 561 LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaMetTrpLeuPhePheGlyCys 580
Db 1681 AAATCCAGAAACAACCCAGATGAGAAATTTTGACCAATGTG---TTTTTGGCTGC 1737
Qy 581 ArgHisLysAspAspAspTyrgLeuPheArgGlyGlnLeuArgHisPheLeuLysHisGly 600
Db 1738 AGCATTAAGATTAAGATTAATCTATTTTCAGAAAGAGCTCAGACATTTCTTACGATGG 1797
Qy 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGlnAla 620
Db 1798 ATCTTAATCTATCTTAAAGGTTTCTCTTCAAGATGCTCTGTTGGGAGAGAGAGCC 1857
Qy 621 ProAlaLysTyrgValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
Db 1858 CCAGCAAAAGTATGTACAAAGCAACATCCAGCTTCATGCGCCAGCGTGGCGAGATCTC 1917
Qy 641 LeuGlnGlnAsnGlyHisIleTyrgValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Db 1918 CTCAGAGAGAGGCGCATATTTATGTGTGTGAGATGCAAGATATATGCGCAAGATGTA 1977
Qy 661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyAlaGlnLysLeuGlnAlaMet 680
Db 1978 CATGATGCCCTTGTGCAAAATATATAGCAAAAGAGTGTGAGTGAATAAATGAAAGCATG 2037
Qy 681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTyrgLeuGlnAspIleTrpSer 698
Db 2038 AAAACCTCGGCGACCTTTAAAGAAAGAAACGTTACCTTCAGATATTTGTGTA 2091

RESULT 6
US-09-371-347A-47
; Sequence 47, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendietz, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 47
; LENGTH: 2093
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-47

Alignment Scores:
Pred. No.: 2,76e-195 Length: 2093
Score: 3590.50 Matches: 696
Percent Similarity: 99.71% Conservat: 0
Best Local Similarity: 99.71% Mismatches: 1
Query Match: 99.08% Indels: 2
DB: 1 Gaps: 1

us-09-371-347a-2 (1-698) x US-09-371-347a-47 (1-2093)

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QY 1 MetArgArgPheLeuLeuTyrAlaThrGlnGlnGlnAlaIleAlaGlu 20  
 DB 1 ATGAGAGAGTTCTGTTACTATATGCTACAGAGGAGGAGCAAGCCATGCGAGAA 60  
 QY 21 GluMetCysGlnGlnAlaValHisGlyPheSerAlaAspLeuHisCysIleSerGlu 40  
 DB 61 GAATAGTGTGAGCAAGCTGTGGTACATGATTTTCTGAGATCTTCACTGATATAGTAA 120  
 QY 41 SerAspLysTyrAspLeuLysThrGluThrAlaProLeuValValIleSerThrThr 60  
 DB 121 TCCGATTAAGTATGACCTTAAACCCAAACACACTCTCTTGTGTGGTTTCAACACG 180  
 QY 61 GlyThrGlyAspProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80  
 DB 181 GGCAACCGAGACCCAGCCGACACAGCCGCAAGTTGTGTAAGAAATACAGAACCAACA 240  
 QY 81 LeuProValAspPhePheAlaHisIleuArgTyrGlyLeuLeuGlyLysAspSerGlu 100  
 DB 241 CTGCGCGGTGATTTCTTGTCTCACCTGGCGTATGGGTACTGGGTCTGGGTGATTCAGAA 300  
 QY 101 TyrThrTyrPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnIleuGlyAla 120  
 DB 301 TACACCTACTTTTGCATGGGGGAGATTAATGATTAACGACTTCAGAGACTTGGAGCC 360  
 QY 121 ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValIleGlu 140  
 DB 361 CGGCAATTTCTATGACATCGACATCGCAGATGACTGTGATTTGAACTTGTGGTTCAG 420  
 QY 141 ProTyrIleAlaGlyLeuTyrProAlaLeuArgLysHisPheArgSerArgGlyGln 160  
 DB 421 CCGTGAGATTGCTGCACTCGCGCCAGCCCTCAGAAAGCATTTTAAAGTCAAGCAGAGCAAA 480  
 QY 161 GlnGluIleSerGlyAlaLeuProValAlaSerProIleSerLeuArgThrAspLeuVal 180  
 DB 481 GAGAGATTAAGTGGCGCATCCCGATGGCATCTGCATCTTGAGAGACAGACTTGTG 540  
 QY 181 LysSerGlnLeuLeuHisIleGlnSerGlnAlaGlnLeuLeuArgPheAspAspSerGly 200  
 DB 541 AAGTCAGAGCTGCTACACATTTGAATCTCAAGTTCGAGCTTCGAAATTCAGATTCAGGA 600  
 QY 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220  
 DB 601 AGAAGAGATTTCTGAGGTTTGTGACCAAAATGCAGTGAACAGCAACCAATCCAAATGTTGTA 660  
 QY 221 IleGluAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240  
 DB 661 ATTGAAGATTTGAGTCTCACTTACCCGTTCCGATCCGACCCCACTCTCAAGACCTCTCTG 720  
 QY 241 AsnIleProGlyLeuProProGlyLysLeuGlnValHisIleuGlnIleuSerLeuGln 260  
 DB 721 AATATTCCTGGTTTAAACCCCAAGATATTTCAGGTATCATTCGAGAGAGTCTCTGGCAG 780  
 QY 261 GlnGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280  
 DB 781 GAGAGAAAGCCCAAGTATCTGTGACTTCAGCAGATCCAGTCTTCAAGTGCCCAATTTCAAG 840  
 QY 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300  
 DB 841 GCAATTCACCTTACTACGATGATGATCCATTAACCACTCTGCTGTGATGAATTTGACACTT 900  
 QY 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320  
 DB 901 TCAATATCAAGACTTTTCTTATCAAGCTGGAGATGCTTCAAGCGTGAATCTGGCTTAACAGT 960  
 QY 321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlyHisCys 340  
 DB 961 GATTCTCAGGTACCAAACTCACTCCAAAGACTGCAGCTTGAGATTAAGAGAGACACTGCG 1020  
 QY 341 ValLeuLeuLysIleLysAlaAspThrLysLysValGlyAlaThrLeuProGlnHisIle 360  
 DB 1021 GTCTTTTGAATAAAGGAGAGACACAAAGAAAGAGAGTACTTACCCCAAGCATATA 1080

QY 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGlnIleArgAlaIlePro 380  
 DB 1081 CTGCGGGAATGTTCTTCCAGTTCATTTTAACTGGTGTCTTGAATCCAGCAATTCCT 1140  
 QY 381 LysLysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGlnLysArgArg 400  
 DB 1141 AAAAAGGCAATTTTTCAGAGCCCTTGTGACTATACAGTACAGTGCATGAAGAGCCGAGG 1200  
 QY 401 LeuGlnIleuLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla 420  
 DB 1201 CTACAGAGCTGTGCACTTAACAAAGGGGACCGCATTAATAGCCGCTTGTACAGATGCC 1260  
 QY 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440  
 DB 1261 TGTGCTGCTGTGTTGATCTCTCTCGCTTCTTCCCTTTCGCAAGCCACACTCAGTCTC 1320  
 QY 441 LeuLeuGlnHisLeuProLysLysLeuGlnProArgProTyrSerCysAlaSerSerLeu 460  
 DB 1321 CTGCTCGAACATCTTCTTAAACCTTCAACCCAGACCATATTCGTGTGCAAGCTCAAGTTTA 1380  
 QY 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480  
 DB 1381 TTTCACCCAGAGAAAGCTCCATTTTGTCTTCAACATTTGGAATTTCTGTACTGCGACA 1440  
 QY 481 ThrGluValLeuArgLysGlyValCysThrGlyTyrPheValLeuLeuValAlaSerVal 500  
 DB 1441 ACGAGAGTTCTGGGGAAGGAGATATGACAGCTGCGCTGGCTGTGTTGTTGCTTCACT 1500  
 QY 501 LeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuValProLysIle 520  
 DB 1501 CTTCAGCCAAACATACATGATCCCATGAAGACGCGGAAACCCCTGGCTCTCAAGATA 1560  
 QY 521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540  
 DB 1561 TCCATCTTCTCTGACAAACAAATTTCTTCCATTTACAGATACACCTCAATCCCATC 1620  
 QY 541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560  
 DB 1621 ATATAGGTGGGTCAAGAAACCGGCAATAGCCCGCTTATTTGGTTCCTACAACTAG --- 1676  
 QY 561 LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaMetTyrLeuPhePheGlyCys 580  
 DB 1677 AAATCCMAAMACAAACCCAGATGGAATTTTGAGCAATGTGGTGTGTTTGTGCTGC 1736  
 QY 581 ArgHisLysAspArgAspTyrLeuPheArgLysGlnLeuArgHisPheLeuLysHisGly 600  
 DB 1737 AGGCATAGAGTATGGGATTTATCTATTCAGAAAAGAGCTCAGACATTTCTTAAGCATGG 1796  
 QY 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGlnAla 620  
 DB 1797 ATCTTAATCATCTTAAAGGTTTCTCTTCAAGAGATGCTCTGTGGGAGAGGAAGCC 1856  
 QY 621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640  
 DB 1857 CCAAGCAAGTATATACAAAGCAACATCCAGCTTCAAGCCAGCAGAGGTGGGAATTCCTC 1916  
 QY 641 LeuGlnGlnAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660  
 DB 1917 CTCGAGAGAACCGCCATATTTATGTGTGTGAGATGCAAGAAATATGGCCAGAGATGA 1976  
 QY 661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyValGlnLysLeuGlnAlaMet 680  
 DB 1977 CATGATGCCCTTGTGCAATATATACAAAGAGAGTGTGAGTTGAAAACTAGAAAGCATG 2036  
 QY 681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTyrLeuGlnAspIleTyrPser 698  
 DB 2037 AAAACCTGGCCACTTTAAAGAAAGAAACCGCTACCTTCAAGATATTTGGTCA 2090

## RESULT 7

US-09-371-347A-51/c

; Sequence 51, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

```

; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 51
; LENGTH: 2187
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-51

Alignment Scores:
Pred. No.: 14.7 Length: 2187
Score: 54.00 Matches: 36
Percent Similarity: 30.82% Conservative: 9
Best Local Similarity: 24.66% Mismatches: 56
Query Match: 1.49% Indels: 45
DB: 1 Gaps: 5

us-09-371-347a-2 (1-698) x US-09-371-347A-51 (1-2187)
Qy 432 ProSerCysGlnProProLeuSerLeuLeuGluHisLeuProLysLeuGlnProArg 451
Db 1924 CCAATGTCTCTCCACCA-----CTTCC 1901
Qy 452 ProTyrSerCysAlaSerSerLeuPheHisProGly-LysLeuHisPheValPheAs 471
Db 1900 AGAGGCACTTTCAGTGGAGATGATCTTCACCAAGTTCAGGAGAGTATGTT----- 1846
Qy 471 nIleValGluPheLeuSerThrAlaThrThrGluValLeuArgLysGlyValCysThrG1 491
Db 1845 -----GTCGTGATGTACTGGATGATGATGTCGGGAGCGGG 1811
Qy 491 YTrPLeuAlaLeuLeuValAlaSerValLeuGlnProAsn-----lleHisAl 507
Db 1810 ACTCTCTCTCATACAGCTTCCCAACCGCTCATTCACAGGAGCAAGGCTGTCTCTCC 1751
Qy 507 aSerHisGluAspSerGlyLysAlaLeuAlaProLysIleSerIleSerProArgThrTh 527
Db 1750 AGAACAATGACCTGACGGGATCCACTACGGTGGCTGATGATCTCTGCCAGG----- 1696
Qy 527 rAsnSerPheHisLeuProAspAspProSerIleProIleIleMetValGlyProGlyTh 547
Db 1695 -----GAAGATGCCCAAGTACAGCATTCGGCTGCAGTTCAGGGGCAAT 1652
Qy 547 rGly-----lleAlaProPheIleGlyPheLe 556
Db 1651 TGGTGATGTTTTCACCTTCACATTGACAGAGTGTAATTAACCGGAGCTGTGATCTCT 1592
Qy 556 uGlnHisArgGlyLys 561
Db 1591 TCAGCACTTCAGAGAG 1576

RESULT 8
US-09-371-347A-51
; Sequence 51, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
```

```

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 51
; LENGTH: 2187
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-51

Alignment Scores:
Pred. No.: 18 Length: 2187
Score: 52.00 Matches: 124
Percent Similarity: 31.52% Conservative: 73
Best Local Similarity: 19.84% Mismatches: 195
Query Match: 1.43% Indels: 235
DB: 1 Gaps: 31

us-09-371-347a-2 (1-698) x US-09-371-347A-51 (1-2187)
Qy 63 GlyAspProAspThrAlaArgLysPheValylsGluIleGlnAsnGlnThrLeuPro 82
Db 475 AGAAGACCA-----ATAGTGACACAGTGGAGAGAGGAGGAGGAGGCTTCACTACCA 528
Qy 83 ValAspPhePheAlaHisLeuArg-----TyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
Db 529 GTGACCTGTGAAGCAATCCAGTGAAGTGTGCT-----GAC 567
Qy 101 TyrThrTyrPheCysAsnGlyLysIleIleLeuAspLysArgLeuGlnLeuGlyAla 120
Db 568 TACTTGACATCTGTGTGGCAGGT----- 591
Qy 121 ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValAlaGlu 140
Db 592 -----TACCCCAAGGCCACCCGAA----- 612
Qy 141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSer-----SerArg 158
Db 613 -----GCAAGGAGCTTTGAGGCTGACCTGAAGCACTTGAAGAGAGAGAGTGTCTGG 663
Qy 159 GlyGlnGluGluIle----- 163
Db 664 GAGGCCATTTTCATCATCAGCAGACTTTCTTTGAGGCTGACACATTTCTCCGCTTGTG 723
Qy 164 -----SerGlyAlaLeuProValAla 170
Db 724 AAGGATGACACGACATGAGGATCATCTGCCCATGTCGCCGAGATCTTCCATCCAG 783
Qy 171 SerProAlaSerLeuAlaGlyThrAspLeuValLysSerGluLeuLeuHisIleGluSerGln 190
Db 784 GGTACACATCTCTCTCGG---CACTTGTGAAGCTGTCCAACTGAGAGTCCACAGAG 840
Qy 191 ValGluLeuLeuArgPheAspAspSerGlyArgLysAspSerGluVal-LeuLysGlnAs 210
Db 841 ATCAAG-----GACGTGATTTGACCAATC 864
Qy 210 nAlaValAsnSerAsnGlnSerAsnValIleGluAspPheGluSerLeuThrAr 230
Db 865 AAAGACAAGATGCTGCATCCGCACTATGACATGACGTGGCGGTGACCTGTGCAG 924
Qy 230 gSerValProProLeuSer-----GlnAlaSer----- 239
Db 925 GAGCTTGTGGCAGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGT 984
Qy 240 -----LeuAsnIleProGlyLeuProPr 247
```



```

; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 41
; LENGTH: 2097
; TYPE: DNA
; ORGANISM: Homo sapiens
; US-09-371-347A-41

Alignment Scores:
Pred. No.: 21.3 Length: 2097
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.38% Indels: 17
DB: 1 Gaps: 2

us-09-371-347a-2 (1-698) x US-09-371-347A-41 (1-2097)
Qy 419 AspaIaCySaIaCySLeuLeuAspLeuLeuAlaPheProSerCySgInProProIeu 438
Db 1894 GAACCTGAGTGTTCCTTGCATACATCTTTCCTGCGGCTTCCTCCCAACAGAGCAT 1835
Qy 439 SerLeuLeuLeuGluHisLeuProIySLeuGln----- 449
Db 1834 CTCTTGAGAGAGAAACCTTTGATGATGATGATCCCATGCTTAAGAAATGTCGACT 1775
Qy 450 -----ProArgProTySerCySaIaSerSerSerLeuPheHisPro 463
Db 1774 CTTTTCGATATGATATATATCCCTATCTTATGCTGCACCAAAACAAACA--CATTGC 1717
Qy 464 GlyIySLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThThGluVal 483
Db 1716 TCCAAATTTCCATCTGGGTGTGTCTTGAGATTCTCTCT--ATGTTGAGGAACCC 1660
Qy 484 LeuArgIySgIyValCySThrGlyTyr 492
Db 1659 AATAAACGGGCTATGCCGTTCTCG 1633

RESULT 11
US-09-371-347A-43/c
; Sequence 43, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 43
```

```

; LENGTH: 2097
; TYPE: DNA
; ORGANISM: Homo sapiens
; US-09-371-347A-43

Alignment Scores:
Pred. No.: 21.3 Length: 2097
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.38% Indels: 17
DB: 1 Gaps: 2

us-09-371-347a-2 (1-698) x US-09-371-347A-43 (1-2097)
Qy 419 AspaIaCySaIaCySLeuLeuAspLeuLeuAlaPheProSerCySgInProProIeu 438
Db 1894 GAACCTGAGTGTTCCTTGCATACATCTTTCCTGCGGCTTCCTCCCAACAGAGCAT 1835
Qy 439 SerLeuLeuLeuGluHisLeuProIySLeuGln----- 449
Db 1834 CTCTTGAGAGAGAAACCTTTGATGATGATGATCCCATGCTTAAGAAATGTCGACT 1775
Qy 450 -----ProArgProTySerCySaIaSerSerSerLeuPheHisPro 463
Db 1774 CTTTTCGATATGATATATATCCCTATCTTATGCTGCACCAAAACAAACA--CATTGC 1717
Qy 464 GlyIySLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThThGluVal 483
Db 1716 TCCAAATTTCCATCTGGGTGTGTCTTGAGATTCTCTCT--ATGTTGAGGAACCC 1660
Qy 484 LeuArgIySgIyValCySThrGlyTyr 492
Db 1659 AATAAACGGGCTATGCCGTTCTCG 1633

RESULT 12
US-09-371-347A-24/c
; Sequence 24, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 24
; LENGTH: 3259
; TYPE: DNA
; ORGANISM: Homo sapiens
; US-09-371-347A-24

Alignment Scores:
Pred. No.: 27.7 Length: 3259
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.38% Indels: 17
DB: 1 Gaps: 2

us-09-371-347a-2 (1-698) x US-09-371-347A-24 (1-3259)
Qy 419 AspaIaCySaIaCySLeuLeuAspLeuLeuAlaPheProSerCySgInProProIeu 438
```

```
Db 1973 GAAGTGGATGTTGCTTGTACACTTTCGCGGGCTCTCTCTCCCAACAGAGACAT 1914
Qy 439 SerLeuLeuLeuGluHisLeuProLysLeuGln----- 449
Db 1913 CTCCTGAGAGGAAACCTTGTGATGATGATGATCCATGCTTAAGAAATGTCTGAGCT 1854
Qy 450 -----ProArgProTyrSerCysAlaSerSerSerLeuPheHisPro 463
Db 1853 CTTTTCGATAGATATATCCCTATCTTATGCTGCTGACCAAAAAACAACA--CATTC 1796
Qy 464 GlyLysLeuHisPheValPheAsnLeuValGluPheLeuSerThrAlaThrGluVal 483
Db 1795 TCCAAATTCATCATCTGGGTGTGTTCTTGGAGTTTCTCTCT---ATGTTAGGAACCC 1739
Qy 484 LeuArgLysGlyValCysThrGlyTyr 492
Db 1738 AATAACGGGCTATGCGGTTCTCTCG 1712
```

## RESULT 13

```
US-09-371-347A-45/C
; Sequence 45, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 45
; LENGTH: 2094
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-45
```

## Alignment Scores:

```
Pred. No.: 22.3 Length: 2094
Score: 49.50 Matches: 17
Percent Similarity: 38.46% Conservative: 8
Best Local Similarity: 26.15% Mismatches: 21
Query Match: 1.37% Indels: 19
Gaps: 2
```

us-09-371-347A-2 (1-698) x US-09-371-347A-45 (1-2094)

```
Qy 419 AspaIaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
Db 1891 GAACCTGGATGTTGCTTGTACACTTTCGCGGGCTCTCTCTCCCAACAGAGACAT 1832
Qy 439 SerLeuLeuLeuGluHisLeuProLysLeuGln----- 449
Db 1831 CTCCTGAGAGAAACCTTGTGATGATGATGATCCATGCTTAAGAAATGTCTGAGCT 1772
Qy 450 -----ProArgProTyrSerCysAlaSerSerSerLeu----- 460
Db 1771 CTTTTCGATAGATATATCCCTATCTTATGCTGCTGACCAAAAAACAACCATTCCTCAA 1712
Qy 461 ---PheHisProGly 464
Db 1711 AATTTCATCTGGGT 1697
```

## RESULT 14

```
US-09-371-347A-47/C
; Sequence 47, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 47
; LENGTH: 2093
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-47
```

## Alignment Scores:

```
Pred. No.: 23.3 Length: 2093
Score: 49.00 Matches: 17
Percent Similarity: 37.88% Conservative: 8
Best Local Similarity: 25.76% Mismatches: 21
Query Match: 1.35% Indels: 20
Gaps: 2
```

us-09-371-347A-2 (1-698) x US-09-371-347A-47 (1-2093)

```
Qy 419 AspaIaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
Db 1890 GAACCTGGATGTTGCTTGTACACTTTCGCGGGCTCTCTCTCCCAACAGAGACAT 1831
Qy 439 SerLeuLeuLeuGluHisLeuProLysLeuGln----- 449
Db 1830 CTCCTGAGAGAAACCTTGTGATGATGATGATCCATGCTTAAGAAATGTCTGAGCT 1771
Qy 450 -----ProArgProTyrSerCysAlaSerSerSerLeu----- 460
Db 1770 CTTTTCGATAGATATATCCCTATCTTATGCTGCTGACCAAAAAACAACCATTCCTC 1711
Qy 461 ---PheHisProGly 464
Db 1710 CAAATTCATCTGGGT 1693
```

## RESULT 15

```
US-09-371-347A-14/C
; Sequence 14, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
```

```
; SEQ ID NO 14
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-14

Alignment Scores:
Pred. No.: 0.885      Length: 25
Score: 47.00         Matches: 8
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.30%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-14 (1-25)

OY 246 ProProglutylLeuGlnValHis 253
Db 25 CCCCAGATATTTCAGATCTTACAT 2

RESULT 16
US-09-371-347A-50/c
; Sequence 50, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 50
; LENGTH: 26
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-50

Alignment Scores:
Pred. No.: 1.04      Length: 26
Score: 46.00         Matches: 8
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.27%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-50 (1-26)

OY 29 HisGlyPheSerAlaAspLeuHis 36
Db 24 CATGATTTCTCGAGATCTTCAC 1

RESULT 17
US-09-371-347A-15/c
; Sequence 15, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
```

```
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 15
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-15

Alignment Scores:
Pred. No.: 1.25      Length: 24
Score: 44.00         Matches: 8
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.21%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-15 (1-24)

OY 136 GluLeuValGluProTyrPile 143
Db 24 GAACCTGGTGGAGCCGTGATTT 1

RESULT 18
US-09-371-347A-12/c
; Sequence 12, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 12
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-12

Alignment Scores:
Pred. No.: 1.36      Length: 23
Score: 43.00         Matches: 7
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.19%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-12 (1-23)

OY 450 ProArgProTyrSerCysAla 456
Db 23 CCGAGACCATATTGCTGTGCA 3

RESULT 19
US-09-371-347A-6
; Sequence 6, Application US/09371347A
```

```

; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; SOFTWARE: FastSeq for Windows Version 4.0
; NUMBER OF SEQ ID NOS: 61
; SEQ ID NO 6
; LENGTH: 26
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-6

Alignment Scores:
Pred. No.: 1.51 Length: 26
Score: 43.00 Matches: 8
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.19% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-6 (1-26)

Qy 525 ArgThrThrAsnSerPheHisLeu 532
Db 1 CGAACACCAATCTCTTCCACTTA 24

RESULT 20
US-09-371-347A-9
; Sequence 9, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 9
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-9

Alignment Scores:
Pred. No.: 1.6 Length: 24
Score: 42.00 Matches: 8
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.16% Indels: 0
DB: 1 Gaps: 0

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us-09-371-347a-2 (1-698) x US-09-371-347A-9 (1-24)

Qy 555 PheLeuGlnHisArgGluTyrLeu 562
Db 1 TTCTTACACATAGAGAAATCTC 24

RESULT 21
US-09-371-347A-3
; Sequence 3, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; SOFTWARE: FastSeq for Windows Version 4.0
; NUMBER OF SEQ ID NOS: 61
; SEQ ID NO 3
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-3

Alignment Scores:
Pred. No.: 1.82 Length: 24
Score: 41.00 Matches: 8
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.13% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-3 (1-24)

Qy 440 LeuLeuLeuGlnHisLeuProLys 447
Db 1 CTCTGTGTCGACATCTCTCTTAA 24

RESULT 22
US-09-371-347A-10/c
; Sequence 10, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; SOFTWARE: FastSeq for Windows Version 4.0
; NUMBER OF SEQ ID NOS: 61
; SEQ ID NO 10
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-10

```



```
Alignment Scores:
Pred. No.: 1.82 Length: 24
Score: 41.00 Matches: 8
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.13% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-10 (1-24)
QY 659 AspValHisAspAlaLeuValGln 666
Db 24 GATGACATGATGACCTTGTGCA 1

RESULT 23
US-09-371-347a-4/c
; Sequence 4, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 4
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347a-4

Alignment Scores:
Pred. No.: 1.88 Length: 25
Score: 41.00 Matches: 7
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.13% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-4 (1-25)
QY 582 HisLysAspArgAspTyrLeu 588
Db 23 CATAAAGATAGGATTATCTA 3

RESULT 24
US-09-371-347a-17/c
; Sequence 17, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
```

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; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 17
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347a-17

Alignment Scores:
Pred. No.: 1.99 Length: 23
Score: 40.00 Matches: 7
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.10% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-17 (1-23)
QY 86 PheAlaHisLeuArgTyrGly 92
Db 23 TTGCTCACCCTGCGGTATGCG 3

RESULT 25
US-09-371-347a-19
; Sequence 19, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 19
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347a-19

Alignment Scores:
Pred. No.: 4.46 Length: 25
Score: 34.00 Matches: 7
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.94% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-19 (1-25)
QY 113 LysArgLeuGlnGluLeuGly 119
Db 3 AAACGACTTCAAGAGCTTGG 23

RESULT 26
US-09-371-347a-5
; Sequence 5, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
```

APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 5  
LENGTH: 23  
TYPE: DNA  
ORGANISM: Homo sapiens  
US-09-371-347A-5

Alignment Scores:  
Pred. No.: 5.31 Length: 23  
Score: 32.00 Matches: 7  
Percent Similarity: 100.00% Conservative: 0  
Best Local Similarity: 100.00% Mismatches: 0  
Query Match: 0.88% Indels: 0  
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-5 (1-23)

QY 516 LeuAlaProlylSerIle 522  
Db 3 CTGGCTCTAGATATCCATC 23

RESULT 27

US-09-371-347A-13  
Sequence 13, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A.  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 13  
LENGTH: 23  
TYPE: DNA  
ORGANISM: Homo sapiens  
US-09-371-347A-13

Alignment Scores:  
Pred. No.: 5.31 Length: 23  
Score: 32.00 Matches: 7  
Percent Similarity: 100.00% Conservative: 0  
Best Local Similarity: 100.00% Mismatches: 0  
Query Match: 0.88% Indels: 0  
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-13 (1-23)

QY 170 AlaserProAlaserLeuarg 176  
Db 3 GCATCCTGATCTTGAGG 23

RESULT 28  
US-09-371-347A-49  
Sequence 49, Application US/09371347A

GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A.  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 49  
LENGTH: 23  
TYPE: DNA  
ORGANISM: Homo sapiens  
US-09-371-347A-49

Alignment Scores:  
Pred. No.: 8.51 Length: 23  
Score: 28.00 Matches: 6  
Percent Similarity: 100.00% Conservative: 1  
Best Local Similarity: 85.71% Mismatches: 0  
Query Match: 0.77% Indels: 0  
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-49 (1-23)

QY 15 AlAlysAlaIleAlaGluIu 21  
Db 1 GCNAGGCCATCGAGAGAGC 21

RESULT 29  
US-09-371-347A-20/c  
Sequence 20, Application US/09371347A  
GENERAL INFORMATION:  
APPLICANT: Gravel, Roy A.  
APPLICANT: Rozen, Rima  
APPLICANT: Leclerc, Daniel  
APPLICANT: Wilson, Aaron  
APPLICANT: Rosenblatt, David  
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:  
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
FILE REFERENCE: 50004/003003  
CURRENT APPLICATION NUMBER: US/09/371,347A  
CURRENT FILING DATE: 1999-08-10  
PRIOR APPLICATION NUMBER: 09/232,028  
PRIOR FILING DATE: 1999-01-15  
PRIOR APPLICATION NUMBER: 60/071,622  
PRIOR FILING DATE: 1998-01-16  
NUMBER OF SEQ ID NOS: 61  
SOFTWARE: FastSeq for Windows Version 4.0  
SEQ ID NO 20  
LENGTH: 25  
TYPE: DNA  
ORGANISM: Homo sapiens  
US-09-371-347A-20

Alignment Scores:  
Pred. No.: 11.4 Length: 25  
Score: 26.00 Matches: 6  
Percent Similarity: 75.00% Conservative: 0

```

Best Local Similarity: 75.00%      Mismatches: 2
Query Match: 0.72%               Indels: 0
DB: 1                             Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-20 (1-25)

QY      265 VALSERVALTHRSERALAASPPRO 272
      ||||| ||||| ||||| |||||
      24 GTCAGCTTACTAGTGCCAAACCT 1

RESULT 30
US-09-371-347a-49/c
; Sequence 49, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 49
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347a-49

Alignment Scores:
Pred. No.: 16.4      Length: 23
Score: 22.00         Matches: 3
Percent Similarity: 100.00%      Conservative: 1
Best Local Similarity: 75.00%      Mismatches: 0
Query Match: 0.61%      Indels: 0
DB: 1               Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-49 (1-23)

QY      104 PheCysangly 107
      ||||| ||||| ||||| |||||
      18 TTCTGCATGCC 7

RESULT 31
US-09-371-347a-4
; Sequence 4, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 4

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```

; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347a-4

Alignment Scores:
Pred. No.: 17.4      Length: 25
Score: 22.00         Matches: 4
Percent Similarity: 100.00%      Conservative: 1
Best Local Similarity: 80.00%      Mismatches: 0
Query Match: 0.61%      Indels: 0
DB: 1               Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-4 (1-25)

QY      538 ILeProIleIleMet 542
      ||||| ||||| ||||| |||||
      9 ATCCCTATCCCTATG 23

RESULT 32
US-09-371-347a-8
; Sequence 8, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 8
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347a-8

Alignment Scores:
Pred. No.: 17.4      Length: 25
Score: 22.00         Matches: 5
Percent Similarity: 71.43%      Conservative: 0
Best Local Similarity: 71.43%      Mismatches: 2
Query Match: 0.61%      Indels: 0
DB: 1               Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-8 (1-25)

QY      318 ProAnSerAppSerGIuVal 324
      ||||| ||||| ||||| |||||
      4 CCTTGAAGTGTGAGAGGCTT 24

RESULT 33
US-09-371-347a-11/c
; Sequence 11, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003

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; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 11
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-11

Alignment Scores:
Pred. No.: 17.4      Length: 25
Score: 22.00        Matches: 5
Percent Similarity: 71.43%  Conservative: 0
Best Local Similarity: 71.43%  Mismatches: 2
Query Match: 0.61%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-11 (1-25)

QY 318 ProAnSerAspSerGluVal 324
DB 22 CCTGAGTGTATGAGGAGGTT 2

RESULT 34
US-09-371-347A-13/c
; Sequence 13, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 13
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-13

Alignment Scores:
Pred. No.: 18.2      Length: 23
Score: 21.00        Matches: 3
Percent Similarity: 75.00%  Conservative: 0
Best Local Similarity: 75.00%  Mismatches: 1
Query Match: 0.58%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-13 (1-23)

QY 361 ProAlaGlyCys 364
DB 23 CCTCAGAGATGC 12

RESULT 35
US-09-371-347A-9/c
; Sequence 9, Application US/09371347A
; GENERAL INFORMATION:

```

```

; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 5
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-5

Alignment Scores:
Pred. No.: 22      Length: 23
Score: 19.00      Matches: 4
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 0.52%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-5 (1-23)

QY 312 AlaPheSerValIleCys 317
DB 23 AGTTCTCTCTATGCTGT 6

RESULT 36
US-09-371-347A-5/c
; Sequence 5, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 5
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-5

Alignment Scores:
Pred. No.: 20.6      Length: 24
Score: 20.00        Matches: 3
Percent Similarity: 83.33%  Conservative: 2
Best Local Similarity: 50.00%  Mismatches: 1
Query Match: 0.55%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-9 (1-24)

```

```
OY      118 LeuGLYAlaArg 121
Db      13 TTAGAGCCAGG 2

RESULT 37
US-09-371-347A-7/c
; Sequence 7, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 7
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-7

Alignment Scores:
Pred. No.:      22      Length:      23
Score:          19.00   Matches:      3
Percent Similarity: 75.00% Conservative: 0
Best Local Similarity: 75.00% Mismatches: 1
Query Match:    0.52%  Indels:      0
DB:             1      Gaps:        0

US-09-371-347A-2 (1-698) x US-09-371-347A-7 (1-23)

OY      530 PheHISLeuPro 533
Db      14 TTCACCACT 3

RESULT 38
US-09-371-347A-12
; Sequence 12, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 12
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-12
```

```
Alignment Scores:
Pred. No.:      22      Length:      23
Score:          19.00   Matches:      3
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    0.52%  Indels:      0
DB:             1      Gaps:        0

US-09-371-347A-2 (1-698) x US-09-371-347A-12 (1-23)

OY      696 IleTyrSer 698
Db      12 ATATGTCT 20

RESULT 39
US-09-371-347A-10
; Sequence 10, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 10
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-10

Alignment Scores:
Pred. No.:      22.6     Length:      24
Score:          19.00   Matches:      5
Percent Similarity: 75.00% Conservative: 1
Best Local Similarity: 62.50% Mismatches: 1
Query Match:    0.52%  Indels:      1
DB:             1      Gaps:        0

US-09-371-347A-2 (1-698) x US-09-371-347A-10 (1-24)

OY      484 LeuArgLysGlyVal-CysThr 490
Db      1 TTGCACAAGGCATCATGTGTACA 22

RESULT 40
US-09-371-347A-15
; Sequence 15, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
```

```
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 15
;; LENGTH: 24
;; TYPE: DNA
;; ORGANISM: Homo sapiens
US-09-371-347A-15

Alignment Scores:
Pred. No.: 22.6      Length: 24
Score: 19.00        Matches: 3
Percent Similarity: 62.50%  Conservative: 2
Best Local Similarity: 37.50%  Mismatches: 3
Query Match: 0.52%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-15 (1-24)

Oy 523 SerProArgThrThrAsnSerPhe 530
Db 1 AATCAGCGCTCAACCAAGGTC 24

RESULT 41
US-09-371-347A-50
;; Sequence 50, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A,
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; PRIOR FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 50
;; LENGTH: 26
;; TYPE: DNA
;; ORGANISM: Homo sapiens
US-09-371-347A-50

Alignment Scores:
Pred. No.: 23.8      Length: 26
Score: 19.00        Matches: 4
Percent Similarity: 71.43%  Conservative: 1
Best Local Similarity: 57.14%  Mismatches: 2
Query Match: 0.52%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-50 (1-26)

Oy 560 GluLysLeuGlnGlnHis 566
Db 3 GAAGATCTGCAGAAATCCAT 23

RESULT 42
US-09-371-347A-8/c
;; Sequence 8, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A,
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David

;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; PRIOR FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 11
;; LENGTH: 25
;; TYPE: DNA
;; ORGANISM: Homo sapiens
US-09-371-347A-11

Alignment Scores:
Pred. No.: 25.3      Length: 25
Score: 18.00        Matches: 3
Percent Similarity: 50.00%  Conservative: 0
Best Local Similarity: 50.00%  Mismatches: 3
Query Match: 0.50%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-11 (1-25)

Oy 357 ProGlnHisIleProAla 362
Db 19 CCTCATCACTTCAAGCA 2

RESULT 43
US-09-371-347A-11
;; Sequence 11, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A,
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; PRIOR FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 11
;; LENGTH: 25
;; TYPE: DNA
;; ORGANISM: Homo sapiens
US-09-371-347A-11

Alignment Scores:
Pred. No.: 25.3      Length: 25
Score: 18.00        Matches: 3
Percent Similarity: 50.00%  Conservative: 0
Best Local Similarity: 50.00%  Mismatches: 3
Query Match: 0.50%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-11 (1-25)

Oy 357 ProGlnHisIleProAla 362
Db 7 CCTCATCACTTCAAGCA 24
```

```
RESULT 44
US-09-371-347A-14
; Sequence 14: Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PasteSeq for Windows Version 4.0
; SEQ ID NO 14
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-14

Alignment Scores:
Pred. No.: 25.3
Score: 18.00
Percent Similarity: 66.67%
Best Local Similarity: 66.67%
Query Match: 0.50%
DB: 1
Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-14 (1-25)
QY 421 CysAlaCys 423
DB 3 TGTACTGT 11

RESULT 45
US-09-371-347A-7
; Sequence 7: Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PasteSeq for Windows Version 4.0
; SEQ ID NO 7
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-7

Alignment Scores:
Pred. No.: 26.3
Score: 17.00
Percent Similarity: 100.00%
Best Local Similarity: 100.00%
Length: 23
Matches: 2
Conservative: 0
Mismatch: 0
```

```
Query Match: 0.47%
DB: 1
Indels: 0
Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-7 (1-23)
QY 491 GLYTrp 492
DB 4 GGTGG 9

Search completed: May 9, 2005, 15:35:49
Job time : 38 secs
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QY 121 TCCGATAGATGACCTTAACCAAGACAGCTCTGTTGTTGTTGTTCTACACG 180
Db 41 SeraspysrtyrAspleuLeuThrgluThralProleuValValValSerThrThr 60
QY 181 GGCACCGGAGACCCACCCGACACAGCCCGCAAGTTGTTAAGAAATACAGACCAACA 240
Db 61 GlyThrglyAspProAspThrAlaArglySphValValValGluLeuGlnAspGlnThr 80
QY 241 CTGCGGGTGAATTTCTTGTGCTGACCTGGATGGATGATGGGCTCGGATTCAGAA 300
Db 81 LeuProValAspPheAlaHisLeuArglyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
QY 301 TACACCTTACTTTGCAATGGGGGAGATTAATTAACGACTTCAAGACTTGAAGCC 360
Db 101 TyrThrTyrrPheCysasnGlyGlyLysIleIleAspLysArgLeuGlnGluValAla 120
QY 361 CGGATTTCTATGACACTGACATGACAGATGACTGTGTAGTTTGAACCTTGTGGT 420
Db 121 ArgHisPheTyrrAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValGlu 140
QY 421 CCGTGAATTTGCTGAGCTGTGCGACGCTTCAAGAAAGACTTTAGATCAAGACAGACA 480
Db 141 ProThrIleAlaGlyLeuThrProAlaLeuArglyHisPheArgSerAlaGlyGln 160
QY 481 GAGAGATAGTGGCGCACTCCGGTGGCATCACCTGCATCTTGAAGACAGACTTGTG 540
Db 161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGTCACATTCATGAACTTCAGTCCAGCTTTCGAAATTCGATTCAGA 600
Db 181 LysSerGluLeuLeuHisIleGluSerGluValGluLeuLeuArgPheAspSerGly 200
QY 601 AGAAGAGATTCTGAGTTTGAACCAAAATGCACTGAAACAGCAACCAATCCATGTTGA 660
Db 201 ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerArgInserAsnVal 220
QY 661 ATTGAAGACTTGAATCTCACTTACCCGTTCCGTTACCCCACTGTCAAGACTCTGTG 720
Db 221 IleGluAspPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 AATTCCTGCTTAAACCCGAGATATTTACAGGTATACGTGACAGAGCTCTTGGCAG 780
Db 241 AsnIleProGlyLeuProProGlyrLeuGlnValHisLeuGlnGlnSerLeuGlyGln 260
QY 781 GAGAAAGCCAAAGTATGTGACTTCAAGATCCAGATCTCAATTTTCAAGTCCAAAG 840
Db 261 GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
QY 841 GCAGTTCACTTACTACGATGATGCGATTAACCACTGCTGTGTAGAAATGGACATT 900
Db 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
QY 901 TCAAAATCAGACTTTCTTCAAGCTGAGATGCTTCAAGCGTGAAGTCCCTAAAGT 960
Db 301 SerAsnThrAspPheSerTyrrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTTCAGGTACAAAGCTACTTCAAAAGACTGACGCTTGAAGATTAAGAGACTGCG 1020
Db 321 AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGluAspLysValGlyHisCys 340
QY 1021 GTCTTTTGAATAAAGGACAGACAAAGAAAGAGAGCTACTTACCCACGACATATA 1080
Db 341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
QY 1081 CTTGGGGATGTTCTCCAGTTCAATTTTACCTGGGTCTGTAAGATCCAGCAATTCCT 1140
Db 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTyrrCysLeuGluIleArgAlaIlePro 380
QY 1141 AAAAGGCAATTTTTCGAGGCTTGTGACTATACAGTACAGTACAGTGTGAAAGCGAG 1200
Db 381 LysLeuLysAlaPheLeuAlaLeuValAspTyrrThrSerAspSerAlaGlyLysArg 400
QY 1201 CTACAGAGAGCTGTGCACTAAACAAAGGGGACGCGATTAAGCGCTTTGTACAGATGCC 1260

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Db 401 LeuGlnGluLeuCysSerLysGlnGlyAlaAlaAspLysSerThrPheValAlaGAspAla 420
QY 1261 TGTGCTGCTGTTTGGATCTCTCTGCTTCCCTTTCCCTTCCAGCCACACATCAGTCTC 1320
Db 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGCAATCTTCTTAAACTTCAACCCAGACCAATTCGATGCACTCAAGTTTA 1380
Db 441 LeuLeuGlnHisLeuProLysLeuGlnProArgProLysSerCysAlaAspSerSerLeu 460
QY 1381 TTTCACCCAGAAAGCTCCATTTTGTCTTCAACATTCGTGAATTTCTGTACTGCCACA 1440
Db 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
QY 1441 ACAGAGTTCTGCGGAAAGGAGATATGACAGCTGCTGCTGCTGCTTGTGCTTCAATT 1500
Db 481 ThrGluValLeuArgLysGlyValCysThrGlyTyrrPheValLeuLeuValAlaSerVal 500
QY 1501 CTTACGCAAAACATACATGATCCATGAGACAGCGGGAAGCCCTGGCTCTTAAGATA 1560
Db 501 LeuGlnProAsnIleHisAlaSerHisGluAspSerClyLysAlaLeuAlaProLysIle 520
QY 1561 TCCATCTCTCTGCAACAAACAAATTTCTTCCACTTACACAGATGACCCCTCAATCCCATC 1620
Db 521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
QY 1621 ATAAATGGTGGCTCAGGAACCGGCATGACCCCTTATTTGGGCTTCTTACAACTAAGAG 1680
Db 541 IleMetValGlyProGlyThrGlyrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGly 560
QY 1681 AAATCCCAAGAAACAAACCCAGATGGAATTTTGAAGCAATGTGTGTTTGGCTGC 1740
Db 561 LysLeuGlnGluGlnHisProAspGlyAsnPheGlyAlaMetThrLeuPhePheGlyCys 580
QY 1741 AGCGATAGAGATAGGATTAATCTATTCAAGAAAGCTCAAGACATTTCTTAAAGATGG 1800
Db 581 ArgHisLysAspArgAspTyrrLeuPheArgGlyGluLeuArgHisPheLeuLysHisGly 600
QY 1801 ATCTTAATCATATAAGGTTTCTTCAAGAGATGCTCTGTGGGAGGAGGAAGCC 1860
Db 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGlnGluAla 620
QY 1861 CCAGCAAGTATGTACAGACCAACATCCAGCTTCAAGGCGACAGGTTGGCAAGATCTTC 1920
Db 621 ProAlaLysTyrrAlaGlnAspAsnIleGlnLeuHisGlyGlnIleValAlaArgIleLeu 640
QY 1921 CTCGAGAGAACGGCCATATTTATGTGTGTGAGATGCAAGAAATGTGCGCAAGATGTA 1980
Db 641 LeuGlnGluAsnGlyHisIleTyrrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
QY 1981 CATGATGCCCTTGTGCAATTAATTAAGCAAGAGGTTGAGTTGAAATCAGAAAGCAATG 2040
Db 2041 AAAACCTTGCCCACTTAAAGAAAGAAAGAAAGCTACTTCAAGATATTTGTGTA 2094
Db 681 LysThrLeuAlaThrLeuLysGlnGlyLysArgTyrrLeuGlnAspIleThrSer 698

```

## RESULT 2

```

US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILER REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A

```



```
QY 1861 CCAGCAAGTATGTACAGACACATCCAGCTTCAGGCGACGAGGTGGCGAGATCTCTC 1920
Db 621 ProhalatyrtyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
QY 1921 CTCGAGGAGAAAGCGCATATTTATGTGTGTGAGATGCAAAAGAAATATGGCCAGATGTA 1980
Db 641 LeuGlnGlnAanGlnHisIleItyrValCysGlyAspAlaItyrAsnMetAlaItyrAspVal 660
QY 1981 CATATGCCCTTGTGCAATAATAAGCAAGAGTTGAGTTGAAAACTGAAGCATG 2040
Db 661 HisAspAlaLeuValGlnIleIserItyrGlnValGlyValGlnItyrLeuGlnAlaMet 680
QY 2041 AAAACCCCTGGCCACTTTAAAGAGAAAGCACTTACCTTCAGATATTGGTCA 2094
Db 681 LysThrLeuAlaThrLeuLysGlnGlnItyrLysArgItyrLeuGlnAspIleItyrSer 698

RESULT 3
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-42

Alignment Scores:
Pred. No.: 1,14e-66 Length: 698
Score: 3620.00 Matches: 697
Percent Similarity: 100.00% Conservative: 1
Best Local Similarity: 99.86% Mismatches: 0
Query Match: 96.07% Indels: 0
Gaps: 0
DB: 1

us-09-371-347a-1 (1-2097) x US-09-371-347A-42 (1-698)
QY 1 ATGAGAGAGTTTCTGTATCTATATGCTACACAGACGAGGACGAAAGCCATCGCAGAA 60
Db 1 MetArgArgPheLeuLeuLeuItyrAlaThrGlnGlnGlnGlnAlaIleAlaGln 20
QY 61 GAATGTGTGAGCAAGGCTGTGTATGATGATTTTCTGAGATCTTCACTGATATAGTAA 120
Db 21 GlnIleCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGln 40
QY 121 TCCGATAGATGACCTTAAACCGAAACAGCTCCTGTGTGTGTGTGTGTCTACACAG 180
Db 41 SerAspLysItyrAspLeuLysThrGlnThrAlaProLeuValAlaValAlaSerThrThr 60
QY 181 GGCAACCGGAGACCCACCGACACAGCCGCGCAAGTTGTTAAGAAATACAGAACCAACA 240
Db 61 GlyThrIleLysPheProAspThrAlaArgLysPheValLysGlnIleGlnAanGlnThr 80
QY 241 CTGCGGATGATTTCTTGTGCTGACCTGCGGTATGGGTATCTGGGTCTCGGATTCAGAA 300
Db 81 LeuProValAspPhePheAlaHisLeuArgItyrIleLeuGlnItyrLysAspSerGln 100
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QY 301 TACACCTACTTTTGCATGGGGGGAGAGATTAATTGATAACGACTTCAGAGCTTGGAGCC 360
Db 101 TyrThrItyrPheCysAanGlyGlyLysIleIleAspLysArgLeuGlnGlnItyrAla 120
QY 361 CGGCAATTTCTATGACACTGACATGACATGACATGCTGTAGATTGAACTTGTGTGAG 420
Db 121 ArgHisPheItyrAspThrGlnHisAlaIleAspAspCysValGlyLeuGlnLeuValGln 140
QY 421 CCGTGATTTGTGACCTCTGCGCCAGCCCTCAGAAAGCATTTTATAGTACAGACAGCAA 480
Db 141 ProIleAlaGlyLeuItyrProAlaLeuArgHisIlePheArgSerSerArgGlyGln 160
QY 481 GAGGAGATAAGTGGCGCAGCTCCGGGCACTACCTCAGCTTCCTTGAAGACAGACCTGTG 540
Db 161 GlnGlnIleSerGlnAlaLeuProValAlaSerProAlaSerLeuAsnIleAspLeuVal 180
QY 541 AAGTCAGAGCTGCTACATTCATTCATTCAGAGCTTCTGAGATTGATGATTCAGACA 600
Db 181 LysSerGlnLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
QY 601 AGAAGGATTTCTGAGGTTTGAAGCAAAATGCGTGAACGACGACCAATCCATGTTGTA 660
Db 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
QY 661 ATTGAAGACTTTGAGTCCCTGACTTACCCGTTGCGTACCCCGCTTCACAGCCGCTCTG 720
Db 221 IleGlnAspPheGlnSerIleThrItyrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 AATATTCCTGTGTTATCCCGCAGAAATTTTACAGTACATCTGACAGAGTCTCTGGCCAG 780
Db 241 AsnIleProGlyLeuProProGlnItyrLysGlnValHisIleGlnGlnItyrLeuGln 260
QY 781 GAGGAAAGCCAAATCTGTGACTTTCAGACGATTCAGCTTTTGAATGCGCAATTTGAAAG 840
Db 261 GlnGlnSerGlnValSerValItyrSerAlaAspProValPheGlnValProIleSerLys 280
QY 841 GCAGTTCACTTACTAGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 900
Db 281 AlaValGlnLeuThrThrAsnAspAlaIleItyrThrIleLeuValGlnLeuAspIle 300
QY 901 TCAATACAGACTTTTCTATACAGCTTGAGATGCTTCAGCGTATCTGCTTAACAGT 960
Db 301 SerAsnThrAspPheSerItyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTTCAGGTACAAAGCCCTACCTCCAAAGACCTGACCTTGAATGAATGAAGACCTGC 1020
Db 321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlnHisCys 340
QY 1021 GTCCCTTTGAAATTAAGGACGACACAAAGAAAGAGACTTACCTTACCCCGCATATA 1080
Db 341 ValLeuLeuLysIleLysAlaAspThrItyrLysGlyAlaIleThrLeuProGlnHisIle 360
QY 1081 CTTGCGGAGATGTTCTCTCAATTCATTTTACTCGTGTCTTGAATTCGAGCAATTCCT 1140
Db 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGlnIleArgAlaIlePro 380
QY 1141 AAAAGGCAATTTTGGAGCGCTTGGAAGCTTACCAAGACGAGTGTGAAAAAGCCGACG 1200
Db 381 LysLysAlaPheLeuArgAlaLeuValAspItyrThrSerAspSerAlaGlnLysAspArg 400
QY 1201 CTACAGAGCTGTGACGATTAACAAAGGGGACCGCATTAATACCGCTTGTAGCAGATGCC 1260
Db 401 LeuGlnGlnLeuCysSerItyrGlnGlnAlaAlaAspItyrSerArgPheValAlaAspAla 420
QY 1261 TGTGCTGCTGTGTGATCTCTCTCGCTTTCCTTTCGACGACCACTCACTGCTC 1320
Db 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGGAACATCTTCTTAACTTCAACCCAGACCATTTGCGTGCAGCTCAAGTTTA 1380
Db 441 LeuLeuGlnItyrIleuProLysLeuGlnProArgProItyrSerCysAlaSerSerLeu 460
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QY 1361 TTTCACCGAGAAAGTCCATTTTGTCTTCAACATTTGTGAATTTGTCTTACATCCGACA 1440
    |||
Db 461 PheHsPFGGLyLysLeuHsPheValPheAsnIleValGIuPheLeuSerThrAlaThr 480
QY 1441 ACAAGGTTCTGCGGAGAGAGATATGACAGCTGGCTGGCTTGTGGTCTTCAAGT 1500
    |||
Db 481 ThrGIuValLeuArgLysGIuValCysThrGIuThrLeuAlaLeuValAlaSerVal 500
QY 1501 CTTGAGCCCAACATCATGATGCCATGAAGACAGCGGGAAGCCCTGGCTCTTAAGTA 1560
    |||
Db 501 LeuGIuPheAsnIleHsAlaSerHsGIuAspSerGIuValAlaLeuAlaProLysIle 520
QY 1561 TCCATCTCTCTCGAACAACAATTTCTTCCATTCACAGATGACCCCTCAATCCCATC 1620
    |||
Db 521 SerIleSerProArgThrThrAsnSerPheHsIleuProAspProSerIleProIle 540
QY 1621 ATAATGTGGGTCCAGAACCGGCAATGACCCCGTTTATGGTCTTCAACATGAGAG 1680
    |||
Db 541 IleMetValGIuProGIuThrGIuIleAlaProPheIleGIuPheLeuGIuHsArgGIu 560
QY 1681 AAATCCCAAGAACAAACACCCAGATGGAATTTGGAGAAATGTGGTGTGTTTGGCTGC 1740
    |||
Db 561 LysLeuGIuGIuGIuHsIleProAspGIuAsnPheGIuAlaMetThrLeuPheHsGIuCys 580
QY 1741 AGCATTAAGATAGGATTTATCTATTCTAGAAAAGAGTCAGACATTTCTTAAGCATGG 1800
    |||
Db 581 ArgHsIleYsaAspArgAspTyrLeuPheArgLysGIuLeuArgHsIlePheLeuLysHsGIu 600
QY 1801 ATCTTAATCATCTTAAGAGTTTCTTCTCAAGAGATGCTCTGTGGGAGAGAGAGACC 1860
    |||
Db 601 IleLeuThrHsIleLeuValIleSerPheSerArgAspAlaProValGIuGIuGIuAla 620
QY 1861 CCAGAAAGTATGTATCAAGACAAACATCCAGCTTCAATGCGCCAGAGTGGCCAGATCTC 1920
    |||
Db 621 ProAlaLysTyrValGIuAsnAsnIleGIuHsHsGIuGIuGIuAlaAlaArgIleLeu 640
QY 1921 CTCGAGAGAGACGGCATATTATTTATGTGTGAGAGATGCAAGATATGAGCATGTA 1980
    |||
Db 641 LeuGIuGIuGIuHsGIuHsIleTyrValCysGIuAspAlaLysAsnMetAlaLysAspAla 660
QY 1981 CATGATGCTCTTGTGCAATAATATTAAGCAAGAGTTGAGTTGAAAATCAAGAACATG 2040
    |||
Db 661 HisAspAlaLeuValGIuHsIleIleSerLysGIuValGIuValGIuLysLeuGIuAlaMet 680
QY 2041 AAAACCTGGCCCACTTTAAAGAGAAAAGCTTACCTTCAGATATTTGGTCA 2094
    |||
Db 681 LysThrLeuAlaThrLeuLysGIuGIuLysArgTyrLeuGIuAspIleTyrSer 698

RESULT 4
US-09-371-347A-44
: Sequence 44, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: PRIOR FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 44
: LENGTH: 698
: TYPE: PRT
: ORGANISM: Homo sapiens

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US-09-371-347A-44
Alignment Scores:
Pred. No.: 1,47e-66 Length: 698
Score: 3614.00 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 1
Query Match: 95.91% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-44 (1-698)
QY 1 ATGAGAGAGTTTGTATTAATAGCTACAGAGAGGAGCAAGGAGCCATCCAGAA 60
    |||
Db 1 MetArgArgPheLeuLeuLeuTyrAlaThrGIuGIuGIuAlaValAlaIleValGIu 20
QY 61 GAAATGTGTAGCAAGCTGTGGTACATGAGATTTTCTGCAATCTTCACTGATTAAGTA 120
    |||
Db 21 GIuMetCysGIuGIuAlaValAlaHsGIuPheSerAlaAspLeuHsIleThrIleSerGIu 40
QY 121 TCCGATTAAGTATGACCTTAATAACCGAASACSTCTGTGTTGTGGTCTTCAACAG 180
    |||
Db 41 SerAspLysTyrAspLeuLysThrGIuThrAlaProLeuValValAlaValSerThrThr 60
QY 181 GGCACCGGAGACCCACCCGACACAGCCGCAAGTTTGTTAAGAAATACAGAACCAACA 240
    |||
Db 61 GIuThrGIuAspProProAspThrAlaArgLysPheValLysGIuIleGIuAsnGIuThr 80
QY 241 CTGCGGTTGATTTTCTTGTCTACCTGCGGTATGAGTTTACTGGGTCTCGGTGATTCAGA 300
    |||
Db 81 LeuProValaAspPhePheAlaHsIleValArgTyrGIuLeuGIuLysGIuAspSerGIu 100
QY 301 TACACCTACTTTTGCATAGGGGGGGAAGATTAATGATAAGACCTTCAAGACCTTGAAGCC 360
    |||
Db 101 TyrThrTyrPheCysAsnGIuGIuLysIleLeuAspLysArgLeuGIuLeuGIuVala 120
QY 361 CCGCATTTCTATGACATGACATGACATGACATGACATGATGATGATGATGATGATGATG 420
    |||
Db 121 ArgHsIlePheTyrAspThrGIuHsIleAlaAspAspCysValGIuLeuGIuLeuValGIu 140
QY 421 CCGTGATGTGTGACCTCTGCGCACCGCTCAGAAAGCATTTTAAAGTCAAGAGAGACAA 480
    |||
Db 141 ProThrIleAlaGIuLeuTyrProAlaLeuArgLysHsIlePheArgSerArgGIuGIu 160
QY 481 GAGAGATTAATGTGGCGCATCTCCCGGTGGCATCAGCTGATCTTGAAGACAGACTTGTG 540
    |||
Db 161 GIuGIuIleSerGIuAlaLeuProValAlaIleSerProAlaSerLeuValArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTGCAGCTTGTGAGATTCAGATTCAGAGA 600
    |||
Db 181 LysSerGIuLeuLeuHsIleGIuSerGIuValGIuLeuLeuAlaArgPheAspSerGIu 200
QY 601 AGAAGAGATTTGAGGTTTGAAGCAAAATGCACTGAGACAGCAACCAATCCAAATGTTGTA 660
    |||
Db 201 ArgLysAspSerGIuValLeuLysGIuAsnAlaValAsnSerAsnGIuSerAsnValVal 220
QY 661 ATGGAAGATTTGAGTCTCACTTACCCGTTCCGATACCCCATCTCTCAAGACCTCTCTG 720
    |||
Db 221 IleGIuAspPheGIuSerLeuThrArgSerValaProProLeuSerGIuAlaSerLeu 240
QY 721 AATATTCCTGTGTTACCCCGAGATTAATTTACAGGTATGACATGACAGAGTCTTGGCCAG 780
    |||
Db 241 AsnIleProGIuLeuProProGIuTyrLysGIuAlaHsIleGIuGIuGIuSerLeuGIuGIu 260
QY 781 GAGGAAGCCAAAGTATGTGTACTTCAAGACATCCAGATTCAGATTCAGATTCAGAAAG 840
    |||
Db 261 GIuGIuSerGIuValIleSerValThrSerAlaAspProValaPheGIuValProIleSerLys 280
QY 841 GCATTTCACTTACTTACGAATGATGACATAAAACCACTGCTGATGATGATGATGATGATG 900
    |||
Db 281 AlaValGIuLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGIuLeuAspIle 300
QY 901 TCAATACAGACTTTCTTCAATCAAGCTGAGATGCTTCAAGCGGTGATCTGCTTAAAGT 960

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Db      301 SerenThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      961 GATTGTGAGGTACCAAGCCTTACTCCAAAGACTGCGAGTTGAAGATAAAGAGACACTGC 1020
Db      321 AspSerGluValGlnSerLeuGlnInArgLeuGlnLeuGlnAspLysArgGluHisCys 340
Qy      1021 GTCCTTTGAAAAATAAGGACGACCAAGAAAGAGAGTACTTCCACCATATA 1080
Db      341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy      1081 CCTGGGGAGTGTCTCCAGTTCATTTTTCACCTGGTCTTGAATCCGACAAATTCCT 1140
Db      361 ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGluIleArgAlaIlePro 380
Qy      1141 AAAAAGGATTTTTCGCGACCCCTTGAGCACTATACAGTGCAGTGGTGAAGCGCAGG 1200
Db      381 LysLysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGluLysArgArg 400
Qy      1201 CTACAGGAGCTGTGACAGTAACAAGGGGACCGCATTAATACCGCTTGTACGAGATGCC 1260
Db      401 LeuGlnGluLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla 420
Qy      1261 TGTGCTGTGTTGGATCTCTCTCTGCTTCCCTTCTTCCAGCCAGCCAGTCAAGTCTC 1320
Db      421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProLeuSerLeu 440
Qy      1321 CTGCTCCGAACATCTTCCCTAACTTCAACCCGACCATATTTGTGTGCAAGCTCAAGTTTA 1380
Db      441 LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerSerLeu 460
Qy      1381 TTTCACCGAGGAAGCTCCATTTTGTCTTCAACATTGGGAATTTCTGTCTACTGCCACA 1440
Db      461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Qy      1441 ACAGAGTCTTGCAGAAAGGAGATGTACAGAGCTGGCTGGCTGTGTGTTGCTTCAATT 1500
Db      481 ThrGluValLeuArgLysGlyValAlaCysThrGlyTrpLeuAlaLeuValAlaSerVal 500
Qy      1501 CTTCAGGCCAAACATACATGATGCCATGCCATGAACGCGGAAAGCCCTGAGCTCCCTAAATA 1560
Db      501 LeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIle 520
Qy      1561 TCCATCTCTCTCCGAACAACAATTTCTTCCACTTACAGATGACCCCTCATCTCCCATC 1620
Db      521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Qy      1621 ATATGTGGGTCCAGGAACCGGATAGCCCGTTTATTGGGTTCTTACCAATAGAGAG 1680
Db      541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Qy      1681 AAATCCAAAGAACACCCGATGAGAAATTTGGAGCAATGTGGTTGTTTTTGGGCTGC 1740
Db      561 LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaMetCysIlePheLeuPheGlyCys 580
Qy      1741 AGGCATAGAGATAGGATATCTATTTCAGAAAGAGCTGACACATTTCTTTAAGCATGGG 1800
Db      581 ArgHisLysAspArgAspTyrLeuPheArgLysGluLeuArgHisPheLeuLysHisGly 600
Qy      1801 ATCTTAACATCATTAAGGTTTCTTCTCAAGATAGCTCTGTGGGGAGAGAGAACCC 1860
Db      601 IleLeuThrHisLeuLysValAsnSerPheSerArgAspAlaProValGlyGlnGlnGluAla 620
Qy      1861 CCAGCAAGATATGTACAAAGACAACATCCAGTTCATGAGCCAGCGAGTGGGAGAAATCTC 1920
Db      621 ProAlaLysTyrValGlnAspAsnIleGlnMetHisGlyGlnGlnValAlaArgIleLeu 640
Qy      1921 CTCGAGGAGAACCGCCATATTATTATGTGTGTGAGATGCAAAAGATATGCGCAAGATGTA 1980
Db      641 LeuGlnGlnLysGlnHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Qy      1981 CARGATGCCCTTGTGGCAAAATTAATAGCAAGAGGTTGAGTTGAAAACTAAGAACCATG 2040

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Db      661 HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGluAlaMet 680
Qy      2041 AAAACCTGGCCACTTTTAAAGAAAGAAAAAGCTACTCTCAGATATTTGCTCA 2094
Db      681 LysThrLeuAlaThrLeuLysGlnGluLysArgTyrLeuGlnAspIleTrpSer 698

RESULT 5
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rama
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ. ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ. ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.: 1,79e-66 Length: 697
Score: 3609.50 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 1
Query Match: 95.79% Indels: 1
Gaps: 1

us-09-371-347A-1 (1-2097).x us-09-371-347A-46 (1-697)
Qy      1 ATGAGAGAGTTCTGTATCATATATGTACACAGCAGGAGCAAGGACATGCGAGAA 60
Db      1 MetArgArgPheLeuLeuLeuTyrAlaThrGlnGlnGlnGlnAlaLysAlaIleAlaGlu 20
Qy      61 GAAATGTGAGCAAGCTGTGTACATGATTTTGTGCAAGATCTTCACTGATTAAGTGA 120
Db      21 GluMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGlu 40
Qy      121 TCCGATTAAGATACCTTAAACACCGAAACAGCTCCCTGTTGTTGTTGTTTCTACAG 180
Db      41 SerAspLysTyrAspLeuLysThrGlnThrAlaProLeuValValAlaValAlaSerThrThr 60
Qy      181 GGCACCGGAGACCCAGCCGACACAGCCCGCAAGTTTGTTAAGGAATTAAGAACCAACA 240
Db      61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluIleGlnHisGlnThr 80
Qy      241 CTCGCGGTTGATTTCTTTGCTCACTGCGGATGGGTTACTGGGCTCGGTTGATTCAGAA 300
Db      81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGlyLysSerGlu 100
Qy      301 TAAACCTACTTTTGAATGGGGGGAAGATATTTGAATGAACGATTCAGAGCTTGGAGCC 360
Db      101 TyrThrTyrPheCysGlnGlyGlyLysIleIleAspLysArgLeuGlnGlnGlnGlyAla 120
Qy      361 CGCATTTTATGACACTGAGCATGAGATGCACTGTGTAGTTTGAACCTTGTGTTGAG 420
Db      121 ArgHisPheTyrAspThrArgHisAlaAspArgCysValGlyLeuGlnLeuValValGlu 140
Qy      421 CGGTGATTTGCTGGAATCTGGCCAGCCCTCAGAAACATTTTAAAGTCAAGACAGAGCA 480

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Db      141  ProtrilleaGlyLeuTrpProAlaLeuArgLysHisPheArgSerArgGlyGln 160
Qy      481  GAGAGAGTAAGTGGCGCATCCCGGTGGCATCACCTGCATCTTGAGAGACAGACTTGTG 540
Db      161  GluGluLeuSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
Qy      541  AAGTCAGAGCTGTACACATTTGAATTCAGAGTCCAGCTTGTGAGATTGATGATTCAGA 600
Db      181  LysSerGluLeuLeuHisIleGluSerGlnValGluLeuLeuArgPheAspSerGly 200
Qy      601  AGAAGAGATTCTGAGGTTTGGAGCAAAATGCAGTGAACAGCAACCAATCCATGTTGTA 660
Db      201  ArgLysAspSerGluValIleuLysGlnAlaSerAlaValAsnSerAsnGlnSerAsnVal 220
Qy      661  ATTGAAGACTTGTGAGTCTCACTTACCCGTGGTACCCCGACCTTCAAGACCTTCTG 720
Db      221  IleGluAspPheGluSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Qy      721  AATATCTGTGGTTACCCCGAGATATTTACAGGTACATGTGACAGAGTCTTGGCCAG 780
Db      241  AsnIleProGlyLeuProProGluTrpLeuGlnValHisLeuGlnGluSerLeuGlyGln 260
Qy      781  GAGGAAAGCCAGATATCTGTGACTTCAGCAGATCCAGTTTCAAGTGCATTTCAAG 840
Db      261  GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Qy      841  GCAGTTCACTTACTAGGAATGATGCCATAAAACCACTGCTGCTGTGATGATTTGCACTT 900
Db      281  AlaValIleuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
Qy      901  TCAATATCAGACTTTTCTATCAGCTGAGAGATGCTTCAAGCTGATCTGCGCTTAACAGT 960
Db      301  SerAsnThrAspPheSerTrpGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      961  GATTCTGAGTACAAAGCTTACTCTCAAGACTGTGACGTTGAAGATAAAGAGACACTGC 1020
Db      321  AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlyHisCys 340
Qy      1021  GTCTTTTGAATAAAGGCGACACAAAGAAAGAGAGTACTTAAACCCAGACATTA 1080
Db      341  ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy      1081  CTTGCGGGATGTTCTCCAGTTCATTTTCTGTCGTCTTGAATCCGAGCAATTCCT 1140
Db      361  ProIleGlyCysSerLeuGlnPheThrThrTrpCysLeuGlnIleArgAlaIlePro 380
Qy      1141  AAAAAGCATTTTTCGAGCCCTTGTGACTATACAGTGAACAGTGTGAAAAGCGCAGG 1200
Db      381  LysLysAlaPheLeuArgAlaLeuValAspTrpThrSerAspSerAlaGluLysArg 400
Qy      1201  CTACAGAGCTGTGACGTAACAAAGGGGCGACCGCATTTACCGCTTTGTACGAGATGCC 1260
Db      401  LeuGlnGluLeuLysSerLysGlnGlyAlaAlaAspTrpSerAspPheValArgAspAla 420
Qy      1261  TGTGCTGCTGTGAGATCTCTCTGCTGCTTCCCTTTTCCAGCCAGCAGCAGTCTC 1320
Db      421  CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Qy      1321  CTGCTCGAACAATCTTCTAAATTCACACCCAGACCATATTTGTGTGCAAGCTCAAGTTTA 1380
Db      441  LeuLeuGlnHisLeuProLysLeuGlnProArgProTrpLysCysValAspSerSerLeu 460
Qy      1381  TTTTACCCAGGAAAGCTTCATTTTGTCTTCAACATTTGTGGAATTTGTCTACTGCCACA 1440
Db      461  PheHisProGlyLysLysHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Qy      1441  ACAAGAGTTCTGGGAGGAGAGTATGTACAGAGTGGGCTGCTGTTGGTCTTCAAGTT 1500
Db      481  ThrGluValIleuArgLysGlyValCysThrGlyTrpLeuAlaLeuValAlaSerVal 500
Qy      1501  CTTGAGCCAAACATATCATGATCCATGATGACAGCGGAAAGCCGTGGCTCTTAAGATA 1560
Db      501  LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle 520

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Qy      1561  TCAATCTCTCGTGAACAACAATTTCTTTCACCTTACAGATGACCCCTCAATCCCATC 1620
Db      521  SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Qy      1621  ATAAAGTGGGTCGAGGAACCGGATAGCCCGCTTTATTTGAGGTTCTTACAAATAGAGAG 1680
Db      541  IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Qy      1681  AAATCTCAAGAACAAACCCAGATGGAATTTTGGACCAATGTGCGTGTGTTTGGCTGC 1740
Db      561  LysLeuGlnGluGlnHisProAspGlyAsnPheGlyAlaMetTrp---PhePheGlyCys 579
Qy      1741  AGCATAAGAGTATGAGGATTTATCTTACAGAAAAGAGCTCAGACATTTCTTAACATAGG 1800
Db      580  ArgHisLysAspArgAspTrpLysPheArgLysGluLeuArgHisPheLeuLysHisGly 599
Qy      1801  ATCTTAATCATCTAAAGGTTTCTCTCAAGAGATGCTCTGTGGGAGAGAGAAAGCC 1860
Db      600  IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGluValAla 619
Qy      1861  CCAGCAAAATATGTACAAAGCAACATTCACCTTCAATGCGCAGCAGGTGGGAGAAATCTC 1920
Db      620  ProAlaLysTrpValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 639
Qy      1921  CTCGAGAGAACCGGCATATTTATGTGTGAGATGCAAAAGAAATATGCGCAAGATGTA 1980
Db      640  LeuGlnGluAsnGlyHisIleTrpValCysGlyAspAlaLysAsnMetAlaLysAspVal 659
Qy      1981  CATGATCCCTTGTGCAATATTAAGCAAAAGAGTGGAGTGAATAAATAGAACATG 2040
Db      660  HisAspAlaLeuValGlnIleIleSerLysGluValGlyAlaGluLysLeuGluAlaMet 679
Qy      2041  AAAACCTGCGCCACTTTTAAAGAAAGAAACGCTACCTTACAGATATTGCTCA 2094
Db      680  LysThrLeuAlaThrLeuLysGluLysArgTrpLeuGlnAspIleTrpSer 697

RESULT 6
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rama
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 4,55e-64 Length: 689
Score: 3481.00 Matches: 687
Percent Similarity: 98.57% Conservative: 1
Best Local Similarity: 98.42% Mismatches: 1
Query Match: 92.38% Indels: 9
DB: 1 Gaps: 6
us-09-371-347a-1 (1-2097) x us-09-371-347a-48 (1-689)

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APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FASTSEQ for Windows Version 4.0
SEQ ID NO 22
LENGTH: 682
TYPE: PR1
ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Score: 4.09e-16 Length: 682
Percent Similarity: 914.00 Matches: 236
Best Local Similarity: 48.30% Conservative: 119
Query Match: 32.11% Mismatches: 288
                24.26% Indels: 92
                Gaps: 15

us-09-371-347a-1 (1-2097) x US-09-371-347A-22 (1-682)
QY 1 ATGAGAGAGTTCTGTATCTATGCTACACAGAGGACGCAAGCCATGCCAGAA 60
DB 1 MethraspPheLeuIleAlaPheGlySerGlnThrGlnAlaGlnThrIleAlaLys 20
QY 61 GAATAGTGTGACAGAGTGTGTACATGATTTTCTGCAGATCTTCACTGTATTAGTAA 120
DB 21 SerLeuLysGlnLysAlaGlnLeuIleGlyLeuThrProAlaGlnLeuAlaLeuAspGlu 40
QY 121 TCCGATAGTATGACCTTAAACCGAAACAGCTCTCTGTGTGTGTTGTTTCAACAG 180
DB 41 AsnGlnLysLysPheAsnLeuAsnGlnLysLysLeuGlySerAlaIleValSerThr 60
QY 181 GGCACCGGAGACCCACCGACACAGCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240
DB 61 G1YAspG1YAspAlaP1oAspAsnCysAlaArgPheValArgArgIleAsnArgAsnSer 80
QY 241 CTGCGCGGTGATTTCTTGTCTCACCTGCGGTATGGGTACTGGGCTGCGGTATTCAGAA 300
DB 81 LeuGlnAsnGlnLysLysLeuLysAsnLeuAspTyrValLeuLeuGlyLeuGlyAspSerAsn 100
QY 301 TACACACTATTCTTTCGATGAGGGGAGATTAATTGATAACAGACTTCAGAGCTTGAGCC 360
DB 101 TyrsSerSerTyrGlnThrIleProArgLysIleAspLysGlnLeuThrAlaLeuGlyAla 120
QY 361 CGGCAATTTCTATGACACTGACATGACAGATGACTGTGTAGTTTGAACCTTGTTGAG 420
DB 121 AsnArgLeuPheAspArgAlaGlnAlaAspAspGlnValGlyLeuGlnLeuGlnValGln 140
QY 421 CCGGAGATTTGCTGAGCTGTGCGACGCTTCAGAAAGCACTTTTAGTCAAGCAGAGAA 480
DB 141 ProTrpIleGlnLysPhePheAlaThrLeuAlaSerArgPheAspIleSerAlaAspLys 160
QY 481 GAGGAGATTAAGTGGGCACTCCGAGTGGACATCACTGCACTCTTGAGGACAGACCTTGTG 540
DB 161 MetAsn-----AlaIleThrGlnSerSerAsnLeuLysLeuAsnGlnVal 175
QY 541 AAGTCAGAG-----CTGCTACACATTGAATTCAGAGTCGAGCTTCTGAGATTGCAT 591
DB 176 LysThrGlnGlnGlnLysLysAlaLeuLeuGlnLysArgIleGlnAspGlnGlnSerAsp 195
QY 592 GATTCAGAGAGA----- 603

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DB 196 AspGlnLysArgGlyArgValIleGlyIleAspMetLeuIleProGlnHisTyrAspTyr 215
QY 604 AAGATTCTGAGGTTTGAAGCAAAATGCAGTGAACGCAACCAATCCAAATGTTGTAAT 663
DB 216 ProGlnLeuSerLeuLeuLysGlySerGlnThrLeuSerAsnAspGlnAsnLeu----- 233
QY 664 GAAGACTTTGAGTCCCTACCTACCCGTTCCGTTACCC-----CCACTCTCAAA 711
DB 234 -----ArgValProIleAlaProGlnProPheIleVal 244
QY 712 GCCTCTGATATATCTGTTTACCCCA-----GAATATTACAGGTACAT 759
DB 245 SerSerValSerAsnArgLysLeuProGlnAspThrLysLeuGlnLysProGlnAsnLeuLys 264
QY 760 CTGACAGAGTCTCTTGGCCAGAGAAAGCAAGATATCTGATCTTCAAGAGATCCAGTT 819
DB 265 LysMetProGlnValAlaThrLysProPheGlnValLeuValSerAlaGlnPheVal 284
QY 820 TTTCAGTCCCAATTTTCAAGGAGTTCACCTTACGATGATGSCATPMAAACCACT 879
DB 285 ThrAsp---ProPheSerLys-----LysIleLysThrLys 295
QY 880 CTGCTGTAGATTTGACATTTCAAT-----ACAGACTTTTCTATCAAGCTGAGAT 933
DB 296 ArgMetIleThrValAspPheGlyAspPheIleAlaGlnLeuGlnLysProGlnLysAsp 315
QY 934 GCCTTCAAGCTGATCTGCTCCCTTACAGATGATTTTCAAGATCAAGCTTCAAGATCTG 993
DB 316 AlaIleTyrPheCysValProAsnProAlaLeuGlnValAsnPheIleLeuLysArgCys 335
QY 994 CAGCTGAGATTAAGAGAGCACTGCGTCTTTGAAATTAAGGAGACAAAGAGAG 1053
DB 336 GlyValLeuAspIleAlaAspGlnGlnCysGlnLeuSerIleAsnProLysThrGlnLys 355
QY 1054 AAGAGACTACCTTACCCAGCATATACCTGCGGAGATTTCTTCCAGTTCAATTTTACC 1113
DB 356 IleAsnAlaGlnIleProGlnHisValHisLysValIleThrThrLeuArgHisMetPheThr 375
QY 1114 TGGTGTCTTGAATCCGAGCAATTCCTTAAAGCAATTTTGGCAGCCCTTGTGACAT 1173
DB 376 ThrCysLeuAspIleArgArgAlaProGlyArgProLeuIleArgValIleAlaGlnSer 395
QY 1174 ACCGATGACAGTCTGTAAGGCGGAGGCTACAGAGCTGTGTCAGATTAACAGGGGAGCC 1233
DB 396 ThrSerAspProAsnGlnLysArgArgLeuLeuGlnLysCysSerAlaGlnIleMetLys 415
QY 1234 GATTATAGCCGCTTGTACGAGATGCTGTGCTGTTGTGATCTCTCTGCTTCC 1293
DB 416 AspPheThrAspPheValArgThrProGlyLeuSerLeuAlaAspMetLeuPheAlaPhe 435
QY 1294 CTTTCTTGCAGCCACCACTCAGTCTCTGCTGCAACATTTCTTAACTTCAACCCAGA 1353
DB 436 ProAsnValLysProProValAspArgLeuIleGlnLeuLeuProArgLeuIleProArg 455
QY 1354 CCATATCTGTGTGCAAGCTCAAGTTTATTCACCCAGAGAAAGCTCCATTTGTGCTCAAC 1413
DB 456 ProTyrSerMetSerSer-----TyrGlnAsnArgLysAlaArgLeuIleTyrSer 472
QY 1414 ATTGTGCAATTTCTGTACTGACCAACAGAGGTTCTGCGGAGAGGATGTATGACAGC 1473
DB 473 GlnMetGlnPheProAlaThrAspGlyArgArgHisSerArgLysGlyLeuAlaThrAsp 492
QY 1474 TGGCTGCGCTTGTGTGTTGCTTCACTTTCAGCCAAACATATCATGATCCCATGAAGAC 1533
DB 493 TrpLeuAsnSerLeu----- 497
QY 1534 AGCGGAAAGCCCTGCTCTAGATATTCATCTCTCTGGAACAACAAATTTCTTCAC 1593
DB 498 -----ArgIleGlyAspLysValGlnAlaLeuGlnLysGlnProAlaArgPheArg 514
QY 1594 TTACCA-----GATGACCCCTCAATCCCATCATATGATGGGCT 1632

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Oy      1099 CAGTTGATTTTAACTGGTGCTTGAATTCGAGAAATTCGTAATAAAGCATTTTGGCA 1155
Db      368 ArgThralaleuThTyTtyleuaspIleThraaProProaGThraaValIeuTy 387
Oy      1159 GCCCTTGTGCACTATACCAAGTGCAGAGCTGTGAAGGCCAGAGCTGCAGAGCTGCAGT 1218
Db      388 GlueuIlaGIntYrAlaSerdluProserGluIngIuIleuAaGlyMeclaaSer 407
Oy      1219 AAACAAGGGGCAAGCCGAT-----TAAAGCGCTTTGTACAGATGCTGTGCCTTG 1277
Db      408 SerSerGlyGluGlyLeuTyLeuSerTrValIaGluAlaArgArgHISile 427
Oy      1273 TTGATGTCCTCCCTGCTTCCCTTCCCTTCCAGAGCAAGCTACAGTCTGTGTCAGAACT 1333
Db      428 LeuAlaIleLeuGlnaPrcCyarProSerleuPrcProIleAerPhIleuICyGluIeu 447
Oy      1333 CTTCCTAAACTTCAACCCAGCAACAATTCGATGTCAGCTCAAGTCTTATTCACCCAGCA 1392
Db      448 LeuProaGluGlnaIlaArgTyTyrSerIleAlaSerSerleuValaIleProaAn 467
Oy      1393 AAGCTCCATTTTGTCTTCAACATGTCGAATTTCTGTCTACTGCCAACAAGAGTTCTG 1455
Db      468 SerValaHISileCyAlaValaValaIaGluTyGluTrIlySaIaGlyArg-----Ile 485
Oy      1453 CGGAAGGGAGATATGACAGCGCTGGCTGCGCTTGTGCTTCAAGTCTTCAAGCAAC 1512
Db      486 AsnuIySaGlyValaIaThraaSnTrIeu-----ArgAlaIyGluIuPro-- 499
Oy      1513 ATACATGCATCCCATGAAGACAGCGCGGAAGCCCTGCTGCTTAAGATATCCATCTCTCT 1572
Db      500 -----ValGlyGluAsnGlyGlyArgAlaIeuValaPrometPheVal----- 513
Oy      1573 CGAACACAATTTCTTCCACTTACCAATGACCCCTCAATCCCATATATATGTGGGT 1633
Db      514 ---ArgIySerGlnPheArgLeuPrcPheIySaIaTrIthProValIleIeetValGly 532
Oy      1633 CCAGGAACCGGCAATGCCCCGGTTTATGGGTTCCCAACAATAGAGAAACTCCAGAA 1692
Db      533 ProGlyTrGlyValaIaPrcPheIleGlyPheIleGlnGluArgAlaTrIeuuArgIu 552
Oy      1693 CAACACCCAGATGGAATTTTGGACAATGTGGTGTTTTGGCTGCAGCATTAAGAT 1752
Db      553 GlnGlyIySgu-----ValGlyIuIuThIleuIeuTyTyGlyCyArgIaGSerIaP 570
Oy      1753 AGGGATTTCTATTGAGAAAGAAGCTGCAGACATTTCTTAAGCATGGATCTTAATCAT 1812
Db      571 GluIaPrcTyLeuTyArgGluGluIleuAlaGlnPheIlaSaGAspGlyAlaIeuThIu 590
Oy      1813 CTAAAGGTTCTCTTCAAGAGATCTCTGTGTGGAGAGGAAGCCCAAGCAAGAT 1872
Db      591 LeuIeuValaIaPrcSerIaG-----GluGlnSerHISIlyValTy 604
Oy      1873 GTACAGAACAATCCAGCTTCAATGCGCAGCAGAGTGCGAGAAATCTCTCCAGAGAAC 1932
Db      605 ValGlnHISleuLeuTyGlnaPrcArgIuHISIleuTrIlyS--LeuIleGluIyGly 623
Oy      1933 GGCCATATTTATGTGTGTGGAGATGCAAGAATATGGCCAAAGATGTACATGATGCCCTT 1992
Db      624 AlaHISIleTyValCyGlyIaSprAlaArgaSnMeclaaGAspValaGlnaSnThPhe 643
Oy      1993 GTGCAGATTAATAGCAAGAGCTTGGAATTTGAATAAATAGAAACAATAAAACCTGTGCC 2055
Db      644 TyTraPrcIleValaIaGluIeuGlyAlaMetGluHISaIaGlnaIaValaIaSprTyIle 663
Oy      2053 ACTTTAAAGAGAAAACGCTACCTTGAGATATTTGCTCA 2094
Db      664 LysIeuMetTrIlyGlyArgTySerIleuIaSprValTrIpsP 677

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APPLICANT: Gravel, Roy A,
APPLICANT: Rozen, Rima
APPLICANT: Lecierc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/233,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 60
LENGTH: 41
TYPE: PRT
ORGANISM: Homo sapiens
US-09-371-347A-60

Alignment Scores:
Pred. No.: 0.0552 Length: 41
Score: 215.00 Matches: 41
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 5.71% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-60 (1-41)
QY 1858 GCCCAGCAAGTATGTATCAAGACAATCCAGCTTCATGCGCAGGTGGCAGATC 1917
DB 1 AAlprhAlalyrlyrValGlnAspAsnIleGlnleuhtIsGlyGlnGlnValAlaArgIle 20
QY 1918 CTCCTCCAGAGAAAGCGGCATATTATGTGTGTGAGATGCAGAAAGATATGCCAAGAT 1977
DB 21 LeuLeuGlnGlnuAanglyhIsIleTyValCysGlyAspAlaTyAsnMetAlaTyAsp 40
QY 1978 GTA 1980
DB 41 Val 41

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Lecierc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/233,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-54

Alignment Scores:

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Db      1 GlYalawettRleuphePheGlyCysearGhtIslysaPaRgaApTyRleuphe 18
RESULT 14
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Gravel, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.:      12.6      Length:      19
Score:          104.00    Matches:      19
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    2.76%    Indels:      0
DB:             1       Gaps:        0

us-09-371-347A-1 (1-2097) x US-09-371-347A-55 (1-19)

Cy      1342 CTTCACCCAGACCATTCCTGTGCAGCTCAAGTTATTTCACCCAGAAAGCTC 1398
Db      1 LeuGlnProArgProTyrSerCysAlaSerSerLeuPheHisProGlyLysLeu 19

RESULT 15
US-09-371-347A-52
; Sequence 52, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Gravel, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 52
; LENGTH: 20
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:      14.3      Length:      20
Score:          100.00    Matches:      20
Percent Similarity: 100.00% Mismatches: 0
Query Match:    2.76%    Indels:      0
DB:             1       Gaps:        0
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Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:      2.65%    Indels:      0
DB:              1       Gaps:        0

us-09-371-347A-1 (1-2097) x US-09-371-347A-52 (1-20)

Cy      10 TTCTGTTACTATATGCTACACAGGAGGCAAGCCATCGCAGAAATGTGT 69
Db      1 PheLeuLeuLeuTyrAlaIleHngInGlnGlyClnAlaIlysaIleAlaIleGlnIleTcys 20

RESULT 16
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Gravel, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. No.:      28.3      Length:      17
Score:          87.00    Matches:      17
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    2.31%    Indels:      0
DB:             1       Gaps:        0

us-09-371-347A-1 (1-2097) x US-09-371-347A-57 (1-17)

Cy      1450 CTGCGAAGGAGATGATGACAGGCTGGCTGTGTGTTGCTTCAGTT 1500
Db      1 LeuArgLysGlyValCysThrGlyTyrPheAlaLeuLeuValAlaSerVal 17

RESULT 17
US-09-371-347A-56
; Sequence 56, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Gravel, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
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; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56

Alignment Scores:
Pred. No.: 72.7 Length: 14
Score: 68.00 Matches: 14
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.80% Indels: 0
Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-56 (1-14)

QY 1402 TTGCTTCAACATTGTGGAATTCTGTCTACTGCGCAACA 1443
Db 1 PheValPheAsnIleValGluPheLeuSerThrAlaThrThr 14

RESULT 18
US-09-371-347A-22
; Sequence 22, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRT
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Pred. No.: 2.88 Length: 682
Score: 61.50 Matches: 113
Percent Similarity: 33.27% Conservative: 61
Best Local Similarity: 21.61% Mismatches: 175
Query Match: 1.65% Indels: 175
Gaps: 29

us-09-371-347a-1 (1-2097) x US-09-371-347A-22 (1-682)

QY 1353 TCTGGTGTGAAGTTAGAGAGATG---TTCGAGCAGAGAGACTGAGTGGCTGCGCAAGA 1297
Db 168 SerAsnLeuSerLeuAsnGlnValIleThrGluGluGlySerAlaLeuGlnIle 187
QY 1296 AGCGAAGCGAGAGAGAGATCCAAAGACGACAGGCGATCTGTGTAACAAGCGGCTATA 1237
Db 188 ArgIleGluAspGluGlnSerAspAspGluGlyArgIle-----ArgVal 202
QY 1236 ATGGGCGCCCGCTTGTACTGACAGACTCCTGTAGGCTGGCTTTTACAGACTGTACT 1177
Db 203 IleIleIle-----IleAspMetLeuIleProGluHisIleAspIleProGlu 217
QY 1176 GGTATAGTCAACAGGCGCTGCAAAAATGCTTTTATGGAATTGCTCGATTCAACAGA 1117
Db 218 IleSerLeuLeuSerGlnSerGln-----Thr 226

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QY 1116 CCAAGTAAATGAATGAGAGAGAACATCCCGAGGATATAGCTGGGGTAAGTAGCTCC 1057
Db 227 LeuSerAsnAspGluAsnLeuArgVal-Pro-----IleAlaPrt 239
QY 1056 TTCTCTTGTGTGTCTGCGCTTTATTTCAAAGACGAGTGTCTTTTATCTTCAAG 997
Db 239 GlnProPheIleValSerSerValSerAsnArg-----LysLeuProGluAspThr 256
QY 996 CTGACAGCTTTGAGTAGGCGCTTTGACTGAGAACTACTCTTTAGGAGATCAAGCTGAA 937
Db 256 LysLeuGluIleProIleAsnLeuLeu-----LysMetProGluValIleThr 271
QY 936 GGCATCTCCAGGCTGATAGGAAAAAGTCTGATTGGAATGTCAATTCTACCGACAGAGT 877
Db 272 -----LysProPheGluVal-----Le 277
QY 876 GGTTTTATAGCATCATTCGTAGTAACTGACTGCTTGAATGGCACTGAAAAC 817
Db 277 uValValSerAlaGluPheValThrAspProPheSerLysIleLysThrLysArgMet 297
QY 816 TGGATCTGCTGAGTACACAGAT-----ACTGGCTTCTCCTGGCGCAAGACATCC-- 765
Db 297 tIleThrValAspPheLysAspHisAlaAlaGluLeuGlnIleTyrgluProGlyAspAlaIle 317
QY 764 -----TGC-----AGATGTACTTG 751
Db 317 eTyrgPheCysValProAsnProAlaLeuGluValaAsnPheIleLeuLysArgCys----- 335
QY 750 TAAATATTCGGGGGTAAACCAAGATATTTCAAGAGCGCTTGAC-----AGTG 700
Db 336 -----GlyValLeuAspIleAlaAspGlnGlnCysGluLeuSerIleAsnPr 351
QY 699 GGGGACCAAGGGGTAGTAGGAGCACTCAAAAGCT-----TCAATPACACATTTGA 649
Db 351 oluThrGluLysIleAsnAlaGlnIleProGlyHisValHisLysIleThrThrLeu 371
QY 648 TTGGTGTCTGTTCACTGCACTTATTTGCTTCAAAAGCTGCAATCTTTCTTCTGATCATC 589
Db 371 gHisMetPheThrThrCysLeuAspIleArgArgAlaProGly---ArgProLeuIleArg 390
QY 588 GAATCTCAGAGCTCCGACTTGAGAT-----TCAATGTGTAG 553
Db 390 gValLeuAlaGluSerThrSerAspProAsnGlnLysArgArgLeuLeuLeuLeuCysSe 410
QY 552 CAGC-----TCTGACTTCAACAGAGTGTCTGCTCAAGAGTACAGGTGA 511
Db 410 rAlaGlnGlyMetLysAspPheThrAspPheValArgThrProGlyLeuSerLeuAlaAs 430
QY 510 TGCACCCGGAGTGCAGCACTTATCTCTTGTCTGCTTGAC-----CTAAATAG 457
Db 430 pMetLeuPheAlaPheProAsnValLys-----ProValAspArgLeuIleGluLe 448
QY 456 CTTTGTGAGGGCTGGCGCAAGAGTCCAGCAATCCAGGCTCAACCAAGTTCTTAACCTTAC 397
Db 448 uLeuProArgLeuIleProArgProIleTyrgSerMetSerSerTyrgLysAsnArgLys----- 466
QY 396 ACAGTCACTGCACTGTCAGATGTCAATGAATGCCGGGCTCCAAAGCTTGTGATGCTTT 337
Db 467 -----AlaArgIle 469
QY 336 ATCAATATTTCTCCCATTCGCAAAAAGTAGTGTAATTCGAATCAACGAGCCCACTAA 277
Db 469 u-----IleTyrgSerGluMetGluPheProAlaThr 479
QY 276 CCGATACCGAGGTAGCAAAAGAAATCAACCCGCAAGTGTGTTGTGTAATTCCTTAAC 217
Db 479 rAspGlyArgArgHisSerArgLysGlyLeuAlaIleAspIlePrtP-----LeuAs 495
QY 216 AAACCTGCGG-----GCTGTGTGCGGTGGGTCTCCGGTG----- 183
Db 495 nSerLeuArgIleGlyAspLysValGlnValLeuGlnLysGluProAlaArgPheArgIle 515
QY 182 -----CCCGTGTGTGAACAACAACAAGAGGA----- 153

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Db      515 uProBleuEnlgWetHrILySaSenSerLaGILySLeuProLeuMeCValGILyPr 535
Oy      152 -----GCTGTTTGCGATTTTAAAGTCATACCTTA----- 126
Db      535 oGLyThrGLyAlSerValPheLeuSerPheLeuHisPheLeuArgLySLeuLyGlnAs 555
Oy      125 -----TCGGA-TCGCACTAATACAGTGAAGATC-----TCGAGAAATCC-- 88
Db      555 pSerProSerAspPheValAspValAlpArgValLeuPhePheGLyCySArgAspSerSe 575
Oy      87 -----ATGTCACCAAGCTTGCTCACACATTTCTTGCGATGGCGTTTGCGCTGC 38
Db      575 rValAspAlaIleTyMetSerGluLeuGluMeCPheValSerGluGlyIleLeuThrAs 595
Oy      37 CCTGCTG 31
Db      595 pLeuIle 597

RESULT 19
US-09-371-347A-34
; Sequence 34, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBER
; FILE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003

US-09-371-347A-34
; Sequence 35, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBER
; FILE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003

US-09-371-347a-1 (1-2097) x US-09-371-347A-34 (1-18)
Oy      1714 GGACCAATGCTGATGTTGTTTGGCTGCACATATAGGATATATCAATTC 1767
Db      1 G1yArgMetHrILeValPheGLyCySArgHisPheGluGluAspHisIleuTy 18
Oy      1714 GGACCAATGCTGATGTTGTTTGGCTGCACATATAGGATATATCAATTC 1767
Db      1 G1yArgMetHrILeValPheGLyCySArgHisPheGluGluAspHisIleuTy 18

ALIGNMENT SCORES:
Pred. No.: 76.3 Length: 18
Score: 61.00 Matches: 10
Percent Similarity: 72.22% Conservative: 3
Best Local Similarity: 55.56% Mismatches: 5
Query Match: 1.62% Indels: 0
DB: 1 Gaps: 0

US-09-371-347A-34
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-34
; TYPE: PRT
; LENGTH: 18
; FILE REFERENCE: 50004/003003
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBER
; FILE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003

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; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232, 028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 35
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Gallus gallus
US-09-371-347A-35

Alignment Scores:
Pred. NO.:
Score: 76.3 Length: 18
Percent Similarity: 61.00 Matches: 10
Best Local Similarity: 72.22% Conservative: 3
Query Match: 55.56% Mismatches: 5
DB: 1.62% Indels: 0
Gaps: 0

US-09-371-347a-1 (1-2097) x US-09-371-347A-35 (1-18)

Cy 1714 GGACCAATGCGTGTGTTTGGCTGACGACATPAGGATATGATATTC 1767
Db 1 G1yAspmetlleLeuPheGlyCyArghIsProAspMetArpHisIleTyr 18

RESULT 21
US-09-371-347A-26
; Sequence 26, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232, 028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071, 622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 26
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-26

Alignment Scores:
Pred. NO.:
Score: 85.4 Length: 18
Percent Similarity: 58.00 Matches: 9
Best Local Similarity: 66.67% Conservative: 3
Query Match: 50.00% Mismatches: 6
DB: 1.54% Indels: 0
Gaps: 0

US-09-371-347a-1 (1-2097) x US-09-371-347A-26 (1-18)

Cy 1714 GGACCAATGCGTGTGTTTGGCTGACGACATPAGGATATGATATTC 1767
Db 1 G1yGlunthreuleuTyrrTgIlyCyArGArGserAspIuAspTyrlleuTyrr 18

RESULT 22
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:

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; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30

Alignment Scores:
Pred. No.: 85.4 Length: 18
Score: 58.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.54% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-30 (1-18)

Qy 1714 GGAGCAATGCTGTTGTTTGGCTGAGCATAGATATGATATTC 1767
Db 1 G1yArGmEtHrIeUa1PheG1yCysArG1ySsrApsG1uAaPheUeUyR 18

RESULT 23
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiocapsa roseopersicina
US-09-371-347A-38

Alignment Scores:
Pred. No.: 88.7 Length: 18
Score: 57.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.51% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-38 (1-18)
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Qy 1714 GGAGCAATGCTGTTGTTTGGCTGAGCATAGATATGATATTC 1767
Db 1 G1yArGmEtHrIeUa1PheG1yCysArG1ySsrApsG1uAaPheUeUyR 18

RESULT 24
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32

Alignment Scores:
Pred. No.: 95.5 Length: 18
Score: 55.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.46% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-32 (1-18)

Qy 1714 GGAGCAATGCTGTTGTTTGGCTGAGCATAGATATGATATTC 1767
Db 1 G1yArGmEtHrIeUa1PheG1yCysArG1ySsrApsG1uAaPheUeUyR 18

RESULT 25
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vibrio radiata
US-09-371-347A-29
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Alignment Scores:
Pred. No.: 99 Length: 18
Score: 54.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.43% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-29 (1-18)
OY 1714 GGAGCAATGCTGTTTGGCTGCAGCATAGGATATGATTC 1767
Db 1 GlyProalaleuLeuPheGlyCysearGysarGsmatglnMetasppheleTyr 18

RESULT 26
US-09-371-347a-28
; Sequence 28, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347a
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
; TYPE: PR
; ORGANISM: Drosophila melanogaster
US-09-371-347a-28

Alignment Scores:
Pred. No.: 103 Length: 18
Score: 53.00 Matches: 8
Percent Similarity: 66.67% Conservative: 4
Best Local Similarity: 44.44% Mismatches: 6
Query Match: 1.41% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-28 (1-18)
OY 1714 GGAGCAATGCTGTTTGGCTGCAGCATAGGATATGATTC 1767
Db 1 GlyGluserileLeuTyrPheGlyCysearGysarGsmatglnMetasppheleTyr 18

RESULT 27
US-09-371-347a-61
; Sequence 61, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347a
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
```

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; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 61
; LENGTH: 9
; TYPE: PR
; ORGANISM: Homo sapiens
US-09-371-347a-61

Alignment Scores:
Pred. No.: 721 Length: 9
Score: 51.00 Matches: 9
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-61 (1-9)
OY 2068 AAAGCTACCTTGAGATATTTGGTCA 2094
Db 1 LysarGlyrLeuGlnasplleTpsr 9

RESULT 28
US-09-371-347a-36
; Sequence 36, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347a
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PR
; ORGANISM: Escherichia coli
US-09-371-347a-36

Alignment Scores:
Pred. No.: 110 Length: 18
Score: 51.00 Matches: 9
Percent Similarity: 61.11% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 7
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-36 (1-18)
OY 1714 GGAGCAATGCTGTTTGGCTGCAGCATAGGATATGATTC 1767
Db 1 GlyLysantrpLeuPheGlyAsnProHisPheThrGlnasppheleTyr 18

RESULT 29
US-09-371-347a-37
; Sequence 37, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
```

;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
;; FILE REFERENCE: 50004/003003  
;; CURRENT APPLICATION NUMBER: US/09/371,347A  
;; PRIOR FILING DATE: 1999-08-10  
;; PRIOR APPLICATION NUMBER: 09/232,028  
;; PRIOR FILING DATE: 1999-01-15  
;; PRIOR APPLICATION NUMBER: 60/071,622  
;; NUMBER OF SEQ ID NOS: 61  
;; SOFTWARE: FastSeq for Windows Version 4.0  
;; SEQ ID NO 37  
;; LENGTH: 18  
;; TYPE: PRT  
;; ORGANISM: Saccharomyces cerevisiae  
US-09-371-347A-37

Alignment Scores:  
Pred. No.: 110 Length: 18  
Score: 51.00 Matches: 8  
Percent Similarity: 72.22% Conservative: 5  
Best Local Similarity: 44.44% Mismatches: 5  
Query Match: 1.35% Indels: 0  
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-37 (1-18)

QY 1714 GGAGCATGCTGTTGTTTGGCTGCAGCATAGCATATGATTC 1767

Db 1 GlytluValPheLeuTyLeuGlySerAthrHisysArgIuGluTyLeuTyr 18

RESULT 30

US-09-371-347A-48  
;; Sequence 48, Application US/09371347A  
;; GENERAL INFORMATION:  
;; APPLICANT: Gravel, Roy A,  
;; APPLICANT: Rozen, Rima  
;; APPLICANT: Leclerc, Daniel  
;; APPLICANT: Wilson, Aaron  
;; APPLICANT: Rosenblatt, David  
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
;; FILE REFERENCE: 50004/003003  
;; CURRENT APPLICATION NUMBER: US/09/371,347A  
;; PRIOR FILING DATE: 1999-08-10  
;; PRIOR APPLICATION NUMBER: 09/232,028  
;; PRIOR FILING DATE: 1999-01-15  
;; PRIOR APPLICATION NUMBER: 60/071,622  
;; PRIOR FILING DATE: 1998-01-16  
;; NUMBER OF SEQ ID NOS: 61  
;; SOFTWARE: FastSeq for Windows Version 4.0  
;; SEQ ID NO 48  
;; LENGTH: 689  
;; TYPE: PRT  
;; ORGANISM: Homo sapiens  
US-09-371-347A-48

Alignment Scores:  
Pred. No.: 4.21 Length: 689  
Score: 50.00 Matches: 23  
Percent Similarity: 39.33% Conservative: 12  
Best Local Similarity: 25.84% Mismatches: 38  
Query Match: 1.34% Indels: 17  
DB: 1 Gaps: 2

us-09-371-347a-1 (1-2097) x US-09-371-347A-48 (1-689)

QY 1894 GAAGCTGATGTTGTTGTATACATCTTGCTGGGCTTCCTCCCAAGAGCAT 1835

Db 418 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 437

QY 1834 CTCTTGAGGAAGAACTTATGATGATTAAGATCCATGCTTAGGAATATGTCGACT 1775  
Db 438 SerLeuLeuLeuGlnHisLeuProTyrLeuGln----- 448  
QY 1774 CTCTTGATAGATATATCCCTATCTTATGCTGCAGCAAAAACAACCA--CATTCG 1717  
Db 449 -----ProArgProTyrSerCysAlaSerSerLeuPheHisPro 462  
QY 1716 TCCAAATTTCCATCGGTGGTGTCTTGAGATTCTCTCT--ATGTTGAGGAACCC 1660  
Db 463 GlyLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 482  
QY 1659 AATTAACGGGCTATGCCGCTTCCTCG 1633  
Db 483 LeuArgIysGlyValCysThrGlyTyr 491

RESULT 31  
US-09-371-347A-46  
;; Sequence 46, Application US/09371347A  
;; GENERAL INFORMATION:  
;; APPLICANT: Gravel, Roy A,  
;; APPLICANT: Rozen, Rima  
;; APPLICANT: Leclerc, Daniel  
;; APPLICANT: Wilson, Aaron  
;; APPLICANT: Rosenblatt, David  
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;  
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE  
;; FILE REFERENCE: 50004/003003  
;; CURRENT APPLICATION NUMBER: US/09/371,347A  
;; PRIOR FILING DATE: 1999-08-10  
;; PRIOR APPLICATION NUMBER: 09/232,028  
;; PRIOR FILING DATE: 1999-01-15  
;; PRIOR APPLICATION NUMBER: 60/071,622  
;; PRIOR FILING DATE: 1998-01-16  
;; NUMBER OF SEQ ID NOS: 61  
;; SOFTWARE: FastSeq for Windows Version 4.0  
;; SEQ ID NO 46  
;; LENGTH: 697  
;; TYPE: PRT  
;; ORGANISM: Homo sapiens  
US-09-371-347A-46

Alignment Scores:  
Pred. No.: 4.17 Length: 697  
Score: 50.00 Matches: 23  
Percent Similarity: 39.33% Conservative: 12  
Best Local Similarity: 25.84% Mismatches: 38  
Query Match: 1.34% Indels: 17  
DB: 1 Gaps: 2

us-09-371-347a-1 (1-2097) x US-09-371-347A-46 (1-697)

QY 1894 GAAGCTGATGTTGTTGTATACATCTTGCTGGGCTTCCTCCCAAGAGCAT 1835

Db 419 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438

QY 1834 CTCTTGAGGAAGAACTTATGATGATTAAGATCCATGCTTAGGAATATGTCGACT 1775

Db 439 SerLeuLeuLeuGlnHisLeuProTyrLeuGln----- 449

QY 1774 CTCTTGATAGATATATCCCTATCTTATGCTGCAGCAAAAACAACCA--CATTCG 1717

Db 450 -----ProArgProTyrSerCysAlaSerSerLeuPheHisPro 463

QY 1716 TCCAAATTTCCATCGGTGGTGTCTTGAGATTCTCTCT--ATGTTGAGGAACCC 1660

Db 464 GlyLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 483

QY 1659 AATTAACGGGCTATGCCGCTTCCTCG 1633

Db 484 LeuArgIysGlyValCysThrGlyTyr 492

```
RESULT 32
US-09-371-347A-2
; Sequence 2, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-01-15
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 2
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-2

Alignment Scores:
Pred. No.: 4.16 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

us-09-371-347A-1 (1-2097) x US-09-371-347A-2 (1-698)
QY 1894 GAACCTGGATGTTCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1835
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 419 Aspalacysalacysleuleuaspheuleu1a1ahepserCysglnProleu 438
Db 1834 CTCTTGAGAGGAACCTTTAGATGAGTTAATCCATGCTTAAGAAATGCTGAGCT 1775
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 439 Serleuleu1eug1u1sleuProlyseu1n----- 449
Db 1774 CTTTTCGATATGATATATCCCTATCTTATGCTGACGCCAACAACA--CATTGC 1717
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 450 -----ProArgProtyrSerCysalaserSerleuPheHisPro 463
Db 1716 TCCAAAATTTCCATCTGGGCTTGTCTTGTGAGTTCTCTCT--ATGTTGAGAACCC 1660
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 464 GlylysleuHispheval1pheasml1eVal1GluPheleuSerThr1a1aThrGluVal 483
Db 1659 AATAACGGGGCTATGCGCGTTCCTGG 1633
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 484 LeuArglysglyValCysThrGlyTyr 492
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:

RESULT 33
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
```

```
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 4.16 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

us-09-371-347A-1 (1-2097) x US-09-371-347A-21 (1-698)
QY 1894 GAACCTGGATGTTCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1835
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 419 Aspalacysalacysleuleuaspheuleu1a1ahepserCysglnProleu 438
Db 1834 CTCTTGAGAGGAACCTTTAGATGAGTTAATCCATGCTTAAGAAATGCTGAGCT 1775
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 439 Serleuleu1eug1u1sleuProlyseu1n----- 449
Db 1774 CTTTTCGATATGATATATCCCTATCTTATGCTGACGCCAACAACA--CATTGC 1717
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 450 -----ProArgProtyrSerCysalaserSerleuPheHisPro 463
Db 1716 TCCAAAATTTCCATCTGGGCTTGTCTTGTGAGTTCTCTCT--ATGTTGAGAACCC 1660
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 464 GlylysleuHispheval1pheasml1eVal1GluPheleuSerThr1a1aThrGluVal 483
Db 1659 AATAACGGGGCTATGCGCGTTCCTGG 1633
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 484 LeuArglysglyValCysThrGlyTyr 492
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:

RESULT 34
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-42

Alignment Scores:
Pred. No.: 4.16 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
```

```
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2
us-09-371-347a-1 (1-2097) x US-09-371-347a-42 (1-698)
QY 1894 GAAGCTGATGTTGTTCTGATACATCTTGCGGGCTTCCCTCCCAAGAGCAT 1835
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 419 AsplacysalacysleuleuhspleuleualapheproserCysglnProleu 438
QY 1834 CTCTTGAGAGAAACCTTTAGATGATTAAGATCCCATGCTTAAGAAATGCTGAGCT 1775
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 439 SerleuleuhsleuhsleuProlysleuGln----- 449
QY 1774 CTCTTGATAGATTAATCCCTATCCCTATGCTGAGCCAAACACACA--CATTC 1717
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 450 -----ProArgProtyrSerCysAlaSerSerleuPheHisPro 463
QY 1716 TCCAAATTTCCATCTGGGTTGTTCTTGAGATTCTCTCT--ATGTTGAGAAACC 1660
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 464 GlylysleuhsPheValPheAsnIleValGlnPheleuserThrIaThrGluVal 483
QY 1659 AATAACGGGCTATGCCGTTCTCG 1633
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 484 LeuArglysglyValCysThrGlyTyr 492

RESULT 35
US-09-371-347a-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; SOFTWARE: FastSeq for Windows Version 4.0
; NUMBER OF SEQ ID NOS: 61
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-44

Alignment Scores:
Pred. No.: 4.16 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
Gaps: 2
us-09-371-347a-1 (1-2097) x US-09-371-347a-44 (1-698)
QY 1894 GAAGCTGATGTTGTTCTGATACATCTTGCGGGCTTCCCTCCCAAGAGCAT 1835
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 419 AsplacysalacysleuleuhspleuleualapheproserCysglnProleu 438
QY 1834 CTCTTGAGAGAAACCTTTAGATGATTAAGATCCCATGCTTAAGAAATGCTGAGCT 1775
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 439 SerleuleuhsleuhsleuProlysleuGln----- 449
QY 1774 CTCTTGATAGATTAATCCCTATCCCTATGCTGAGCCAAACACACA--CATTC 1717
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 450 -----ProArgProtyrSerCysAlaSerSerleuPheHisPro 463
```

```
QY 1716 TCCAAATTTCCATCTGGGTTGTTCTTGAGATTCTCTCT--ATGTTGAGAAACC 1660
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 464 GlylysleuhsPheValPheAsnIleValGlnPheleuserThrIaThrGluVal 483
QY 1659 AATAACGGGCTATGCCGTTCTCG 1633
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 484 LeuArglysglyValCysThrGlyTyr 492

RESULT 36
US-09-371-347a-27
; Sequence 27, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; SOFTWARE: FastSeq for Windows Version 4.0
; NUMBER OF SEQ ID NOS: 61
; SEQ ID NO 27
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347a-27

Alignment Scores:
Pred. No.: 118 Length: 18
Score: 49.00 Matches: 8
Percent Similarity: 61.11% Conservative: 3
Best Local Similarity: 44.44% Mismatches: 7
Query Match: 1.30% Indels: 0
Gaps: 0
us-09-371-347a-1 (1-2097) x US-09-371-347a-27 (1-18)
QY 1714 GAAGCAATGTTGTTGTTGCTGAGCATTAAGATAGGATTAATCTATTC 1767
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
   : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 1 GlyIuThrleuentyrTyGlyCysArgAlaIaGlnsPtyrleuTyR 18

RESULT 37
US-09-371-347a-23
; Sequence 23, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; SOFTWARE: FastSeq for Windows Version 4.0
; NUMBER OF SEQ ID NOS: 61
; SEQ ID NO 23
; LENGTH: 677
```

```

      TYPE: PRT
      ORGANISM: Homo sapiens
US-09-371-347A-23

Alignment Scores:
Pred. NO.:          4.41           Length:        677
Score:             49.00           Matches:       20
Percent Similarity: 45.12%         Conservative: 17
Best Local Similarity: 24.39%     Mismatches:   27
Query Matchn:       1.31%         Indels:       18
DB:                 1            Gaps:          4

us-09-371-347a-1 (1-2097) x US-09-371-347A-23 (1-677)

QY      695 ACCGACCGGTGAAGTCTTCATTAACAACATTGGATTGCTGTTCC 636
      ::||| ||::|||::|||::|||::|||::|||::|||::|||::|||
Db      13 SerGIuaIaValaGlucIn---ValSerLeuPheSerMetThrAspMetIleuDe 31

QY      635 ACTGCA-----TTTTCTCTCAAACCTCAGAATCCTTCTT 600
      ::||| ||| |||::|||::|||::|||::|||::|||::|||
Db      32 SerLeuIleValIGlyLeuLeuThrTyTrTPheLeuPheArgLySLysLsgluIval 51

QY      599 CCTGAATCATGCATCTCAGAAAGCTCGACTTGAGTAAATGTGTAGACAGCTCATCTTC 540
      |||||::|||::|||::|||::|||::|||::|||::|||::|||
Db      52 ProGUluphetHrLysIllegInThreuthr-----SerSeValArgIgluSerthe 69

QY      539 ACA-----AGGTCCTGCTCAAGATGACGATGCATGCCACCGGG 501
      |||::|||::|||::|||::|||::|||::|||::|||::|||
Db      70 ValGIuLyMetLySLyethrGLyArgSuuIleIleValPheTyrgLySerGIunthrGLy 89

QY      500 AGTCGC 495
      ::|||
Db      90 ThrIla 91

RESULT 38
US-09-371-347A-33
Sequence 33, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Gravel, Roy A,
APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 33
LENGTH: 18
TYPE: PRT
ORGANISM: Homo sapiens
US-09-371-347A-33

Alignment Scores:
Pred. NO.:          150           Length:        18
Score:             42.00           Matches:       8
Percent Similarity: 62.50%         Conservative: 2
Best Local Similarity: 50.00%     Mismatches:   6
Query Matchn:       1.11%         Indels:       0
DB:                 1            Gaps:          0

us-09-371-347a-1 (1-2097) x US-09-371-347A-33 (1-18)

QY      1720 ATGCGCTGTTTGGCTGCAGCATGAAGATAGGATATATCATTC 1767
      ||| ||| ||||| ||||| ||||| ||||| ||||| ||||| |||||

```

[illegible]

Percent Similarity: 50.00% Conservative: 3  
 Best Local Similarity: 35.00% Mismatches: 5  
 Query Match: 0.928 Indels: 5  
 DB: 1 Gaps: 1

us-09-371-347a-1 (1-2097) x US-09-371-347a-55 (1-19)

OY 1756 CCCTATCCTTATGCTGAGCGCAAAAACACACATGCTCAAAATTCATCTGGGT 1697  
 Db 3 ProargProlyrSerCySalserSerleu-----PheHisProGly 17

RESULT 41  
 US-09-371-347a-39

; Sequence 39, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 39

; LENGTH: 19

; TYPE: PRT

; ORGANISM: Pisum sativum

US-09-371-347a-39

Alignment Scores:

Pred. No.: 182 Length: 19

Score: 34.00 Matches: 6

Percent Similarity: 53.85% Conservative: 1

Best Local Similarity: 46.15% Mismatches: 6

Query Match: 0.90% Indels: 0

DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-39 (1-19)

OY 1714 GGAGCAATGCTGTTTGGCTGACGCAATAGAT 1752

Db 1 GlyLeuAlaIrpLeuPheLeuGlyValAlaAsnValasp 13

RESULT 42

US-09-371-347a-40

; Sequence 40, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 40  
 ; LENGTH: 18  
 ; TYPE: PRT  
 ; ORGANISM: Spinacia oleracea  
 US-09-371-347a-40

Alignment Scores:

Pred. No.: 208 Length: 18

Score: 31.00 Matches: 5

Percent Similarity: 62.50% Conservative: 0

Best Local Similarity: 62.50% Mismatches: 3

Query Match: 0.82% Indels: 0

DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-40 (1-18)

OY 1714 GGAGCAATGCTGTTTGGCTGACGCAATAGAT 1737

Db 1 GlyLeuAlaIrpLeuPheLeuGly 8

RESULT 43

US-09-371-347a-36

; Sequence 36, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 36

; LENGTH: 18

; TYPE: PRT

; ORGANISM: Escherichia coli

US-09-371-347a-36

Alignment Scores:

Pred. No.: 214 Length: 18

Score: 30.00 Matches: 4

Percent Similarity: 85.71% Conservative: 2

Best Local Similarity: 57.14% Mismatches: 1

Query Match: 0.80% Indels: 0

DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-36 (1-18)

OY 1967 ATATCTTGACATCTCCACAC 1947

Db 5 LeuPhePheGlyAsnProHis 11

RESULT 44

US-09-371-347a-59

; Sequence 59, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

```

: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371.347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 59
: LENGTH: 6
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-59

```

```

Alignment Scores:
Pred. No.: 1.08e+03      Length: 6
Score: 29.00             Matches: 6
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.77%       Indels: 0
DB: 1                     Gaps: 0

```

us-09-371-347a-1 (1-2097) x US-09-371-347A-59 (1-6)

```

OY      1822 TCCTTCACAGATGCT 1839
Db      1 Serpaserargapala 6

```

```

RESULT 45
US-09-371-347A-58
: Sequence 58, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371.347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 58
: LENGTH: 22
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-58

```

```

Alignment Scores:
Pred. No.: 182           Length: 22
Score: 29.00             Matches: 6
Percent Similarity: 60.00% Conservative: 0
Best Local Similarity: 60.00% Mismatches: 4
Query Match: 0.78%       Indels: 0
DB: 1                     Gaps: 0

```

us-09-371-347a-1 (1-2097) x US-09-371-347A-58 (1-22)

```

OY      515 GGTATGACACCGAGTGCACCTATC 486
Db      7 GlyProGlyThrGlyIleAlaProPheIle 16

```

Search completed: May 9, 2005, 15:29:31  
Job time : 27 secs

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